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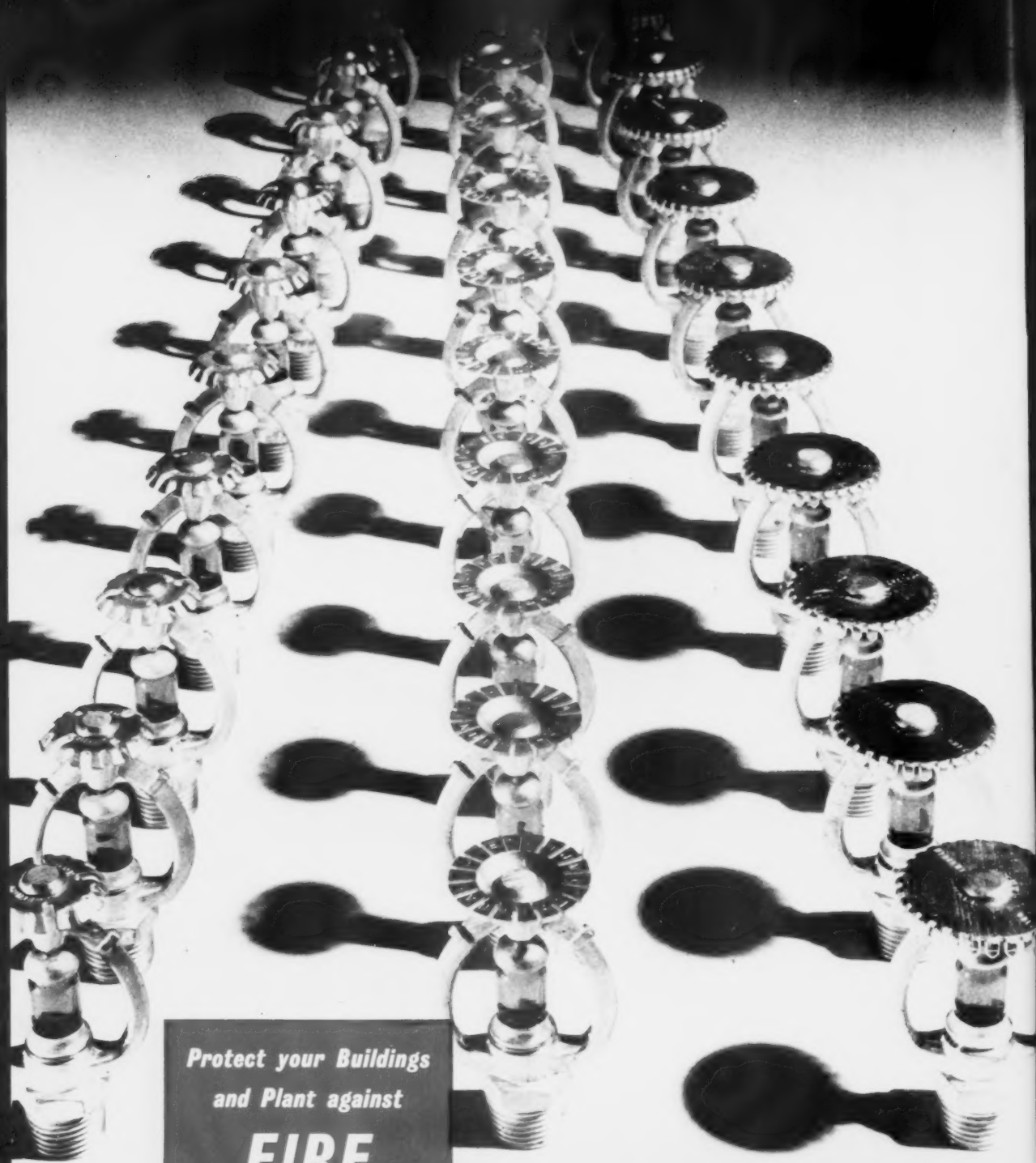

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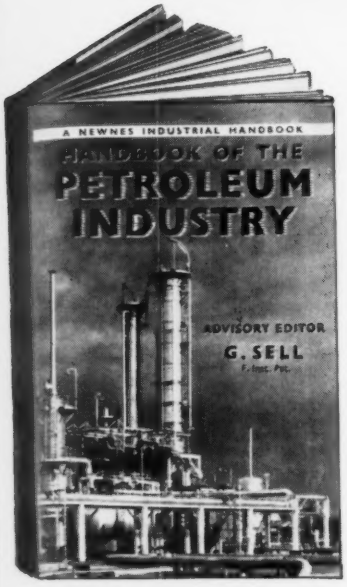

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CONTRIBUTORS

J. G. Cook, Ph.D., F.R.I.C.
S. E. Coomber, Ph.D., A.R.S.M., D.I.C.
H. A. Dossett
C. A. Fothergill, Ph.D., A.R.S.M., F.G.S.
H. Gilmour, B.Sc., M.Inst.Pet.
W. J. Harris
G. D. Hobson, Ph.D., A.R.S.M., D.I.C.
C. W. G. Martin, F.R.I.C., F.Inst.F., M.I.Mar.E., F.Inst.Pet.
L. G. Miskin, B.Sc., A.F.Inst.Pet.
G. Sell, F.Inst.Pet.
T. H. H. Skeet, LL.B.
D. P. Wade, B.Sc. (Econ.).

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WHY ALKYLATE IS THE KEY TO CURRENT GASOLINE BLENDING

OF THE FIVE typical high-quality blends which go into premium gasoline, alkylate is by far the best performer.

The reason is quite apparent in the table: Alkylate, though it can't claim the top research octane rating, does much better by the motor-octane method and, most important, excels in actual road performance.

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But the payoff is road performance. As requirements rise, today's cars are beginning to rate fuels more nearly as they are evaluated in the laboratory by the motor method. Both yardsticks are still important, but their relation to each other, called sensitivity, is something the industry is watching more closely.

	Research octane (RON)	Motor octane (MON)	Sensitivity (RON minus MON)	Road octane (Uniontown)
Alkylate	103.0	104.5	— 1.5	107.5
Reformate extract	103.7	94.0	9.7	103.5
C_7 plus reformate	103.0	93.5	9.5	102.5
C_5 plus reformate	100.0	91.7	8.3	100.0
Catalytic cracked	99.0	87.5	11.5	98.0

Shown here are the antiknock values of five typical high-quality leaded blends. Note the more direct correlation of road with motor octane.

Note, too, that neither the research nor the motor method gives the refiner a direct fix on his ultimate goal—how the fuel is actually judged by the car on the road. The industry is dissatisfied with both laboratory methods on this count. But it must live with them until something better is developed.

Of all available stocks today, alkylate is the standout. Moreover, alkylate shows better road performance when blended with aromatics than with cat gasoline. Polymer gasoline ranks generally higher than cat cracked by the research method. But both motor and road tests downgrade this olefin to the point where it is now going out of the picture as a premium blending stock.

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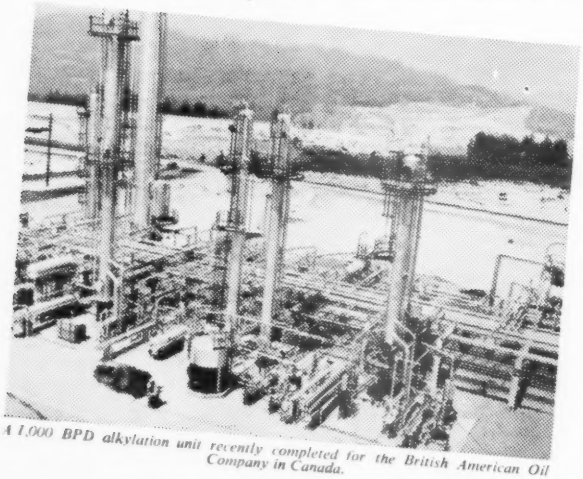

A 1,000 BPD alkylation unit recently completed for the British American Oil Company in Canada.

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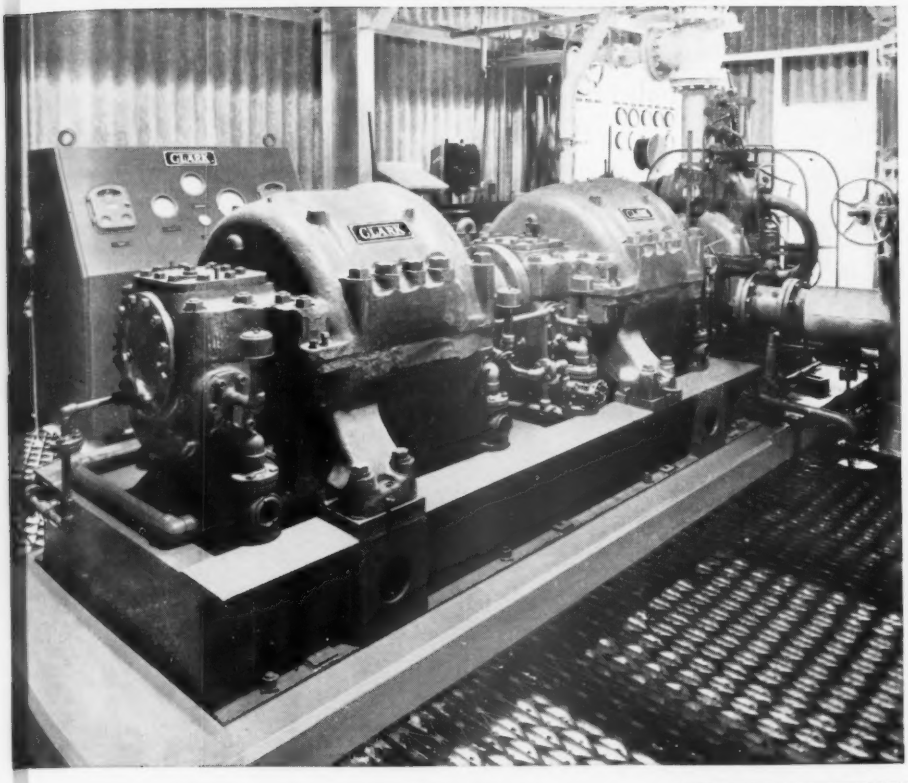

Two Clark No. 2 case 4-impeller centrifugal compressors for process gas on butene dehydrogenation duty at modern refinery of Esso Petroleum Company Limited, Fawley. Low stage 7650 S.C.F.M. High stage 7300 S.C.F.M. 9000 rpm., 1820 bhp. Driven by direct coupled steam turbine.

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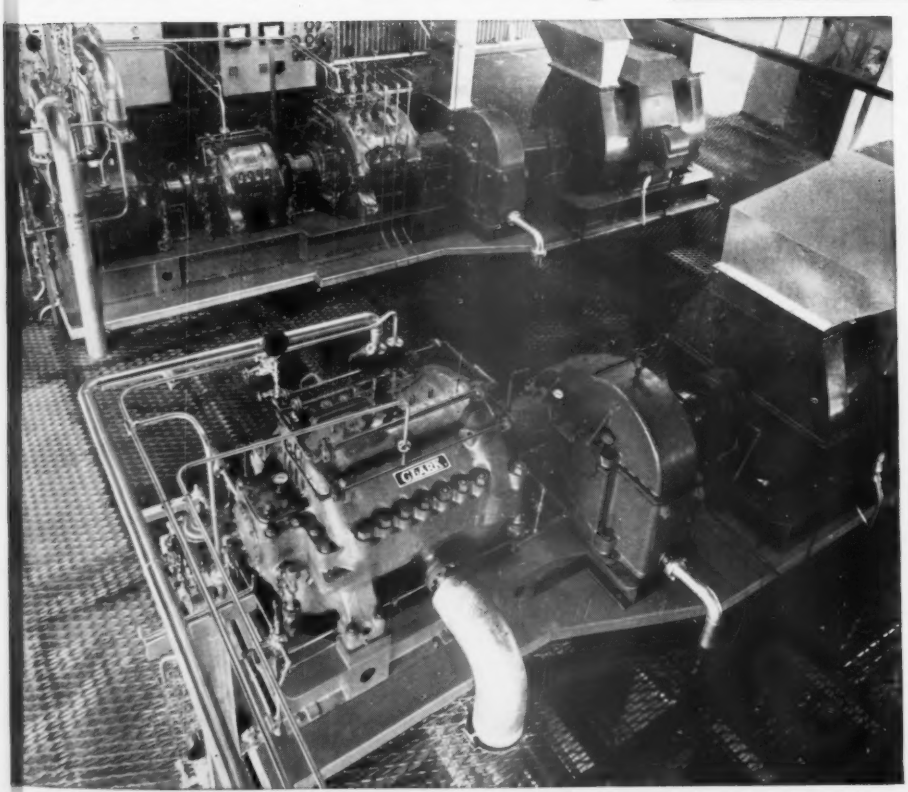

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Three Clark centrifugal compressors at Esso refinery at Fawley. Driven in tandem through speed increaser gear by 3500 bhp. electric motor: 1st stage, No. 3 case 4-impeller 11,400 S.C.F.M. at 8450 rpm.; 2nd stage, No. 2 case 5-impeller 8960 S.C.F.M.; 3rd stage, No. 1 case 7850 S.C.F.M.

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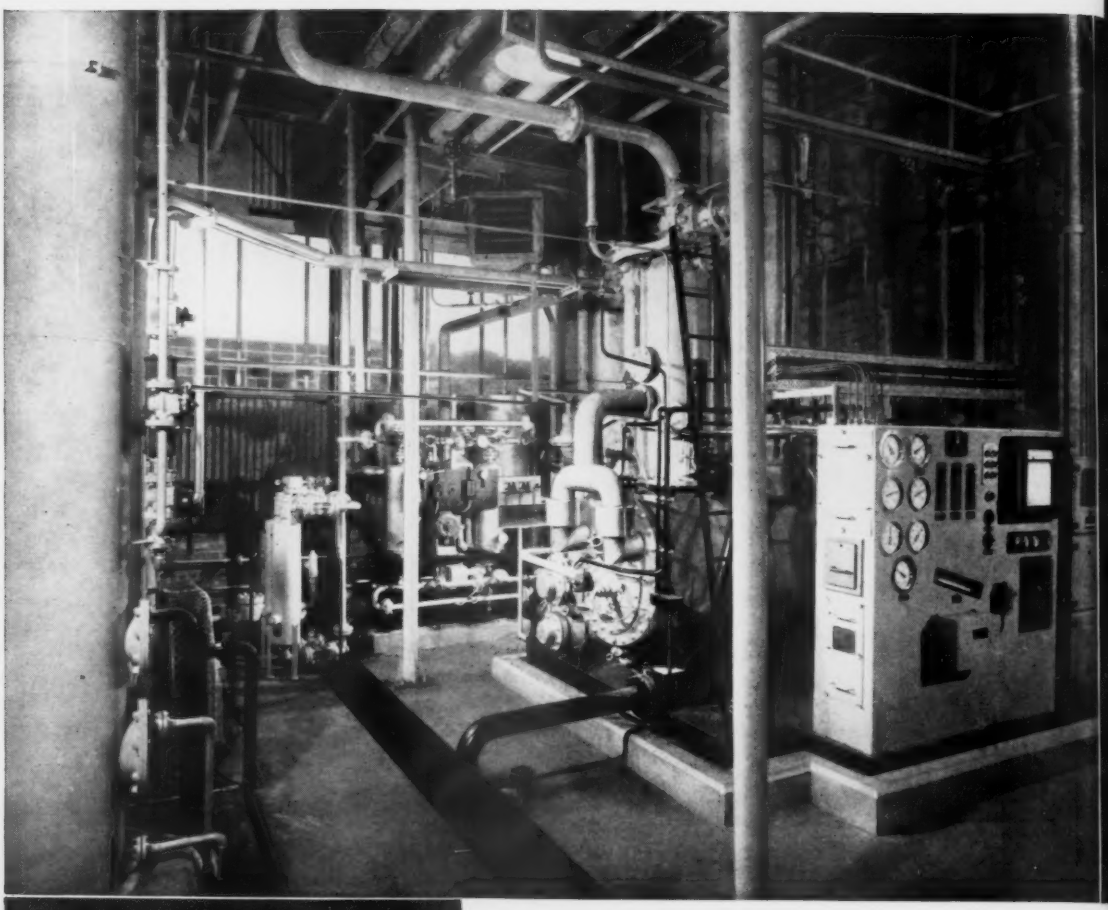

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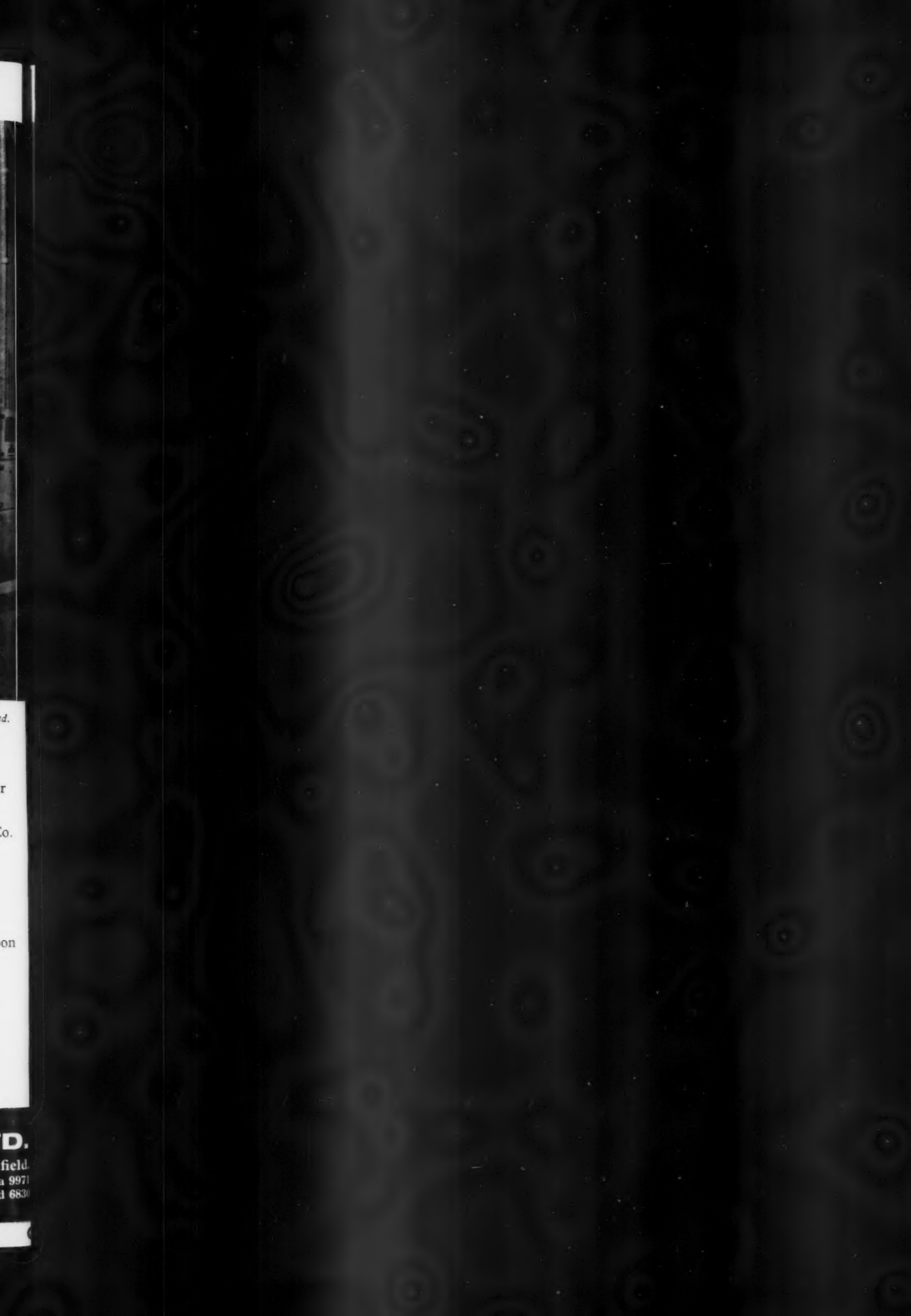

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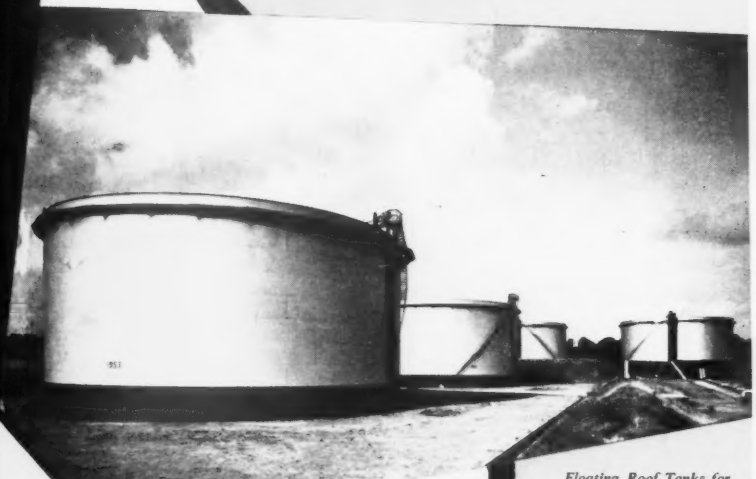

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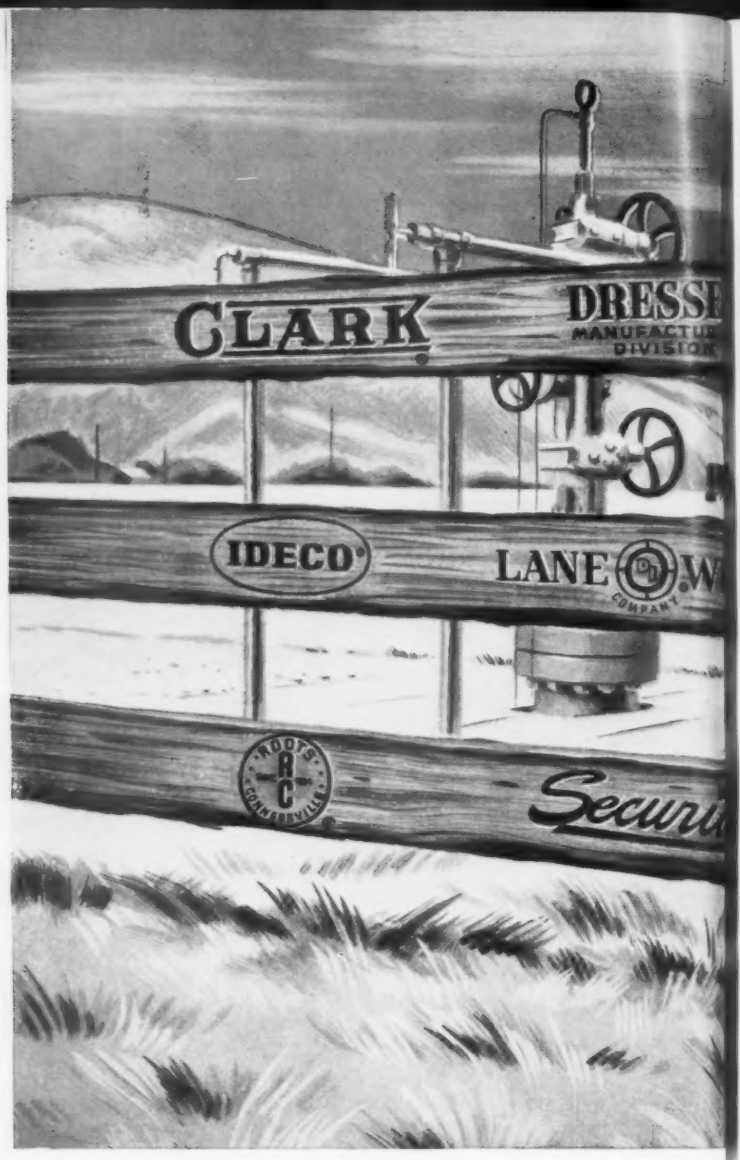

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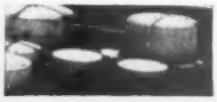

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*The United Kingdom Motor Vehicle Industry**

by ERIC WOODBRIDGE†

1. Introduction

The motor industry‡ is the United Kingdom's largest exporter and in the first half of 1957 it contributed about 12·5 per cent of the value of Britain's visible export trade. The British motor industry manufactured some 10,000 vehicles half a century ago, in 1908. After a history of changing fortunes, more than a million vehicles were produced in 1956 and the total value of exports of all its products up to June 1957 was running at an annual rate of £440 millions, an all-time record.

The prospects for the industry are good and manufacturers have shown their faith in the future by embarking on modernization and expansion plans entailing large capital expenditure. Similar projects by component manufacturers and other suppliers are also involved. The rate of increase in output envisaged in these schemes presupposes a large increase in overseas demand which absorbs about 50 per cent of output at the present time. At home high taxation and inadequate roads are paramount factors curtailing and limiting motor vehicle sales; purchase tax alone is charged at 60 per cent on cars and 30 per cent on goods vehicle chassis. The size of the potential overseas market may be seen when it is realized that whereas the United States, with the largest number of cars in use in the world, has one for every 3 people, Western Europe has one for every 20, while India has only one for every 2000, and other Asian countries certainly less.

There are, however, two major factors which are likely to become increasingly important in determining the pattern of the United Kingdom's share of world motor vehicle markets. The first is competition. The world's largest motor vehicle industry, that of the United States, produces six or seven times as many vehicles as that of the United Kingdom, but exports only three-quarters of the number exported by the United Kingdom. The reason for this is partly the vast size of the U.S. home market, but also the continuing world dollar shortage which makes the purchase of U.S. vehicles, certainly of U.S. cars, difficult or impossible for many countries. European manufacturers are offering increasing competition in many markets, especially in Europe itself. That competition will certainly grow with Britain's probable association with the European Common Market, but it should also open up new opportunities.

The second factor is that the U.K. vehicle manufacturers have, for various reasons, found it necessary to establish and expand overseas assembly plants. Local assembly, involving in some cases progressive local manufacture, has been forced upon vehicle manufacturers largely by the desire of countries to develop their own motor industries.

In the main, British manufacturers have tackled the problems of local assembly and manufacture in two ways: (1) by arranging with their distributor to undertake the assembly on their behalf, with technical assistance, and with jigs and equipment supplied from the home factory; or (2) by establishing their own manufacturing facilities in the overseas country, and investing either the whole capital, or a part, in conjunction with the local distributor.

Approximately 40 per cent of the industry's exports are being sent abroad unassembled, and assembly plants overseas provide also a base for repairs and spares service.

In the final analysis, there seems little reason to doubt that the enterprise and ingenuity which U.K. manufacturers have shown in building up export markets and developing sales and service organizations all over the world, will enable them to hold their own in the world motor vehicle trade and thereby continue to strengthen the whole British economy. A remarkable development has been that in the early part of 1957 the U.S.A. became the British car industry's principal overseas market. 43,000 British cars were exported there up to June 1957, a figure about three times greater than in the first half of 1956. North America as a whole imported little short of 60,000. The South American Republic of Argentina rose to

*Read to a meeting of the IP London Branch on 21 November 1957.

†Standards and Technical Manager of the Society of Motor Manufacturers and Traders.

‡The term "the industry" is here used to include not only cars, commercial vehicles, and agricultural tractors and their parts and accessories, but also a wide range of the products which it manufactures such as motor boats and marine, stationary, and industrial engines, trailers, and transport service equipment.

third place in the group of leading purchasers of British commercial vehicles.

This paper traces the United Kingdom's contribution to the development and use of the motor vehicle and of the industry manufacturing it; it goes on to describe the present organization, output, and methods of the U.K. industry and its past, present, and possible future markets both at home and overseas. A final section deals with Britain and motor racing.

II. Historical Background

Centuries of experiment and invention in several countries preceded the motor vehicle industry in anything like its modern form.

Early Vehicles 1769-1896

It is generally accepted that the first practical self-moving road carriage was the steam wagon constructed by a Frenchman, N. J. Cugnot, in 1769. Another early model was that of the British engineer, William Murdock, a pupil of James Watt, built in 1784. Other British pioneers were Robert Fourness, whose steam vehicle was produced in 1788, Richard Trevethick, who constructed a steam road vehicle in 1801, and R. Anderson who, in 1839, produced the first electric road vehicle.

An internal combustion engine was designed in October, 1852, by the Germans Busse and Kuhnemann of Leipzig, while two Italians, Barsanti and Mateucci were granted a patent in England on 12 June, 1857. An engine was first fitted to a car by the Frenchman, J. J. Etienne Lenoir in 1860, was improved by the Germans Otto and Langen and the Frenchman de Rochas, and came into common use during the 1870's. These were gas engines using coal gas or producer gas as fuel. In Germany, Benz made his first car in 1885 and Daimler in 1886. Shortly afterwards the manufacture of motor cars was begun under Daimler's direction in Germany. In 1889 the Frenchmen, Panhard and Levassor acquired the manufacturing rights over the Daimler engine and began to produce vehicles in France in 1891.

Growth of the U.K. Industry 1896–1920

In the United Kingdom the Red Flag Regulations of 1831, whereby locomotives had to be preceded by a red flag carried at walking pace, were deemed to apply to motor vehicles in 1865. In 1878 the Highways and Locomotives (Amendment) Act rescinded this provision and in 1896 the Locomotives on Highways Act imposed a speed limit of 14 mph, but local government boards were given powers to reduce this if necessary, and this was done (to 12 mph) at the outset. On 1 January, 1904, the speed limit was raised to 20 mph, under the Motor Car Act of 1903, and this limit continued in general operation until 1930. It is considered that these laws discouraged British inventors and retarded the development of the British industry.

In 1896 Lanchester and Daimler began to manufacture as public companies. Of the early British cars one of the most efficient was the Lanchester. The 1896 model had shaft drive, wire wheels, pneumatic tyres, automatic lubrication, and magneto-electric ignition, and some of these features are still in common use to-day. Other firms, such as Humber and Wolseley followed shortly afterwards.

Commercial vehicle manufacture was, at the outset, closely linked with that of cars. The first goods carrying motor vehicle is believed to have been a 3-ton Napier supplied in 1902 for carrying flour.

A large number of firms entered the industry between 1900 and 1914, including Rolls-Royce, Napier, Albion, AEC, Dennis, Armstrong Siddeley, Crossley, Austin, Standard, Morris, Ford, Vauxhall, and many others still in existence.

The U.K. motor vehicle industry expanded more slowly than that of the United States, but began to receive international recognition after 1902, when S. F. Edge won the Gordon-Bennett race, run in conjunction with the Paris-Vienna race, in a 40 hp Napier. The industry was handicapped by having nowhere to test cars at more than 20 mph until 1907, when W. T. Locke-King built the Brooklands racing track. In 1913 Lambert, in a 25 hp Talbot, was the first man to cover a hundred miles in an hour.

The first model to be produced on a large scale was the model "T" Ford which was first made by the Ford Motor Co. of Great Britain at Old Trafford, Manchester, in 1911, 3 years after it had been launched on the U.S. market. In 1913, Singer brought out a 10 hp model and about the same time William Morris (now Viscount Nuffield) produced a 50 mph, 50 mpg car, selling at £175 inclusive of everything except the tyre for the spare wheel. A fourth car to be produced on a large scale was the Rover model of 1912. The Austin Motor Co. built its first car in 1905, but did not produce any model in large quantities until after the first world war. It was not until 1921 that the Austin Seven was introduced to become the most famous of the cheap small cars which were to enlarge the scale of the industry by increasing its effective market.

By 1913, 198 different models of British cars had been placed on the market.

The first world war handicapped the growth of the industry in the United Kingdom, most of the car producers turning over to the production of aircraft engines and shells. The market collapsed and the U.K. Government imported most of the vehicles it required from the United States, which was thus able to develop a great industry serving both a home, and a growing foreign, demand, without outside competition.

At the end of the war the U.S. manufacturers had achieved a position of unchallenged superiority in the industry. Their output had increased from 485,000 cars in 1913 to 2,227,349 in 1920. During this time U.K. output showed little increase, although the value of exports of cars, commercial vehicles, and chassis in 1920 at £6·4 million was higher than that in 1913 (£2·9 million).

Expansion and International Competition 1920–1939

Immediately after the first world war U.K. manufacturers set about catering for the urgent domestic demand for cars. But most of their plants had become unbalanced, machine shops having been greatly extended and body shops and other departments neglected. Large capital outlay was necessary to redress the balance, at a time of dear money and high prices. The post-war slump arrived and by 1921 the industry found itself with a large excess of capacity of supply over the demand which could be absorbed at the ruling prices.

During the rest of the 1920's, however, the industry recovered. The output of cars rose from 32,000 in 1920 to 71,000 in 1923, more than twice that estimated for 1912. By 1929 it had increased to 182,000 largely because of the adoption in a modified form of U.S. methods of manufacture by the few firms engaged in the production of cheap light cars. Commercial vehicle production shared in this expansion and rose from nearly 24,000 in 1923 to 56,000 in 1929. In

1929 the U.S. industry produced annually 5,337,000 cars and commercial vehicles, about four fifths of the world's total production. Canada then produced 263,000 cars and commercial vehicles, France 253,000, and Germany 156,000.

With the onset of the world depression at the end of 1929, the output of the motor vehicle industry throughout the world contracted. The progress of the U.K. industry was, however, scarcely checked. In 1930 the very slight decline in the output of private cars was nearly offset by a rise in the output of commercial vehicles, and in 1933 combined output was 286,000, about 50,000 more than in 1929. The advance continued and in 1937 the industry turned out 380,000 cars and 114,000 commercial vehicles. The ratio of British to U.S. output increased from under 5 per cent in 1929 to over 10 per cent in 1937, and to nearly 18 per cent in 1938. Continental output made a substantial recovery, especially in Germany; but the United Kingdom remained well ahead of other European countries. The relative improvement in the position of the U.K. industry during this period had several causes. First, despite a high level of unemployment in Britain, real income per head rose between 1929 and 1939, largely because of exceptionally favourable terms of trade, and the motor car is a commodity the sales of which respond quickly to rising incomes. Second, U.S. exports fell as unit costs rose with falling output during the depression, and as the abandonment of the gold standard led to depreciation of currencies in relation to the dollar, and to differential tariffs. Third, additional motor fuel taxation in many countries gave an advantage to the smaller British cars with low petrol consumption.

Second World War 1939–45

During the second world war the British motor vehicle industry was turned over almost entirely to the production of war equipment, army vehicles and tanks of all kinds, and also to aero engine manufacture. The first example of the "group system", under which most war production was organized, was the engine shadow factory scheme to manufacture aeroplane engines, in which the Austin, Ford, Daimler, Rolls-Royce, Standard, Armstrong Siddeley, Rover, and other companies co-operated. Tank production proved to be a highly specialized business, involving techniques new to the motor vehicle companies.

Post-War Period, 1945–1957

The U.K. industry since the last war has shown a remarkable resilience, an upsurge in production, and a very large increase in the proportion of output exported. In the early postwar years the industry met with an immediate success in overseas markets. The main reasons for this were:—

(1) pent-up, war starved demand for vehicles in other countries;
(2) an immediate concentration of resources upon the particular demands of export markets;
(3) dollar shortage of importing countries and a high level of domestic demand in North America, which reduced U.S. and Canadian exports;
(4) the slower recovery of continental competitiors, especially Germany and to a lesser degree France, due to serious war damage and general dislocation;
(5) the rising standard of living in many countries.

By 1948, production in the pre-war peak year—1937—had already been exceeded and in 1950, 522,515 cars and 262,702 commercial vehicles were produced, of which 76 and 55 per cent respectively were exported compared with 20 and 15 per cent of output in 1938. Production declined in 1951 and again in 1952, partly because of shortages of materials (especially sheet steel), and partly because of the contraction in overseas demand, accentuated by import restrictions imposed for balance of payments reasons by some important sterling area markets, and by increasingly intensive foreign competition. But in 1953 the industry staged a spectacular recovery by producing 834,901 units. Production in 1954 reached another record total of more than a million units, of which about half were for export. Output continued to rise and a further peak level was attained in 1955 with nearly 1¼ million units, and, although the home market absorbed a higher percentage of the increased production of 200,000 over the previous year the rate of exports was more than maintained. Vehicles shipped, including agricultural tractors, totalled 638,127, an increase of 33,772 units over the previous year. Overseas currency earned by exports of all products of the industry also increased by over £47,000,000.

British motor manufacturers have shown that they are well able to deal with a highly competitive sales environment. The impact of the restyling and improved specifications of the new models produced by British manufacturers has been reflected in greatly increased popularity and sales. Extended servicing facilities and the speedy supply of spare parts to overseas markets have also contributed to the successful sales drive now in operation to meet increasing continental competition.

The year 1956 opened with some prospects of a continuation of expanding production. These early hopes were shattered by a series of events which had an increasingly serious effect upon the motor industry.

The results of Government financial policy at home and abroad had been to curtail the sales of British motor vehicles. A "credit squeeze," the effect of increased Purchase Tax, and hire purchase restrictions at home, together with export barriers in overseas markets, combined to depress sales and create redundancy in the factories, which erupted in a series of labour disputes.

Although exports of cars were down by nearly 15 per cent compared with 1955 unit figures, one bright aspect of this difficult period was that commercial vehicle exports by value rose to £86·3 millions.

Early in 1957 came the first signs of the industry's recovery. Notwithstanding the period of petrol rationing and damping of demand in Western Europe occasioned by the Suez crisis, production eventually reached more than half a million cars and commercial vehicles by the end of the first six months, 527,600 in all left the factories for home and overseas buyers and operators. Of that figure cars accounted for nearly 390,000. New car sales at home numbered less than 200,000 compared with 237,000 in the first six months of 1956.

Abroad the story was a very different one; over the six months, cars exported reached the figure of 205,000, 23,500 more than in January to June of 1956. Export sales of commercial vehicles numbered 62,000, and exports of agricultural tractors in the six months period numbered nearly 55,000.

This paper will be continued in the February issue of the *IP Review*.

Canada's Oil Potential

Only Four per cent Probed

Guests of honour at the Twenty-second Annual Dinner of the Oil Industries Club, held under the presidency of H. W. Rocke at Grosvenor House, London, on 21 November 1958, were His Excellency the Hon. G. A. Drew, Q.C. (High Commissioner for Canada in the United Kingdom) and the Rt Hon. Reginald Maudling, M.P. (Paymaster-General).

The Hon. G. A. Drew, Q.C., proposing *The Oil Industries Club*, said that he would hardly be doing justice to the occasion if he did not say something about the part that many of those present had been playing in the dramatic growth of the oil and gas industry in Canada in the past ten years. He had no hesitation in saying that he looked upon the close association between Canada and Britain as one of the really unique opportunities of modern history which might have almost undreamed of results for the Commonwealth (applause).

The members of the Council of Manufacturers of British Petroleum Equipment who visited Canada in 1957 had made an excellent report which had been an extremely useful contribution to the better understanding of the possibilities in this field. Canadian oil production had jumped by leaps and bounds in the last ten years. During that period, and particularly in the first part of it, it was difficult to move British capital into Canada, and in spite of generations of experience in many parts of the world the British oil industry and the manufacturers of petroleum equipment were at a very great disadvantage in meeting the opportunities which occurred at that time.

There was no reason whatever to believe that the present volume of increase would slacken. Reliable estimates were that they had actually opened up not more than 4 per cent of the oil possibilities of the western prairies and British Columbia, excluding the tar sands of Athabaska. He hoped that British oil experts, manufacturers, and oil companies would move vigorously into that field.

The oil industry in Canada was bound to expand at an accelerating rate. Canadians used more oil products per head than any other country in the world except the United States. The population of Canada was increasing at a rapid rate, and in the second largest country in the world new uses for oil products were being introduced all the time. An enormous domestic market would be there in the years ahead.

His Excellency was not overlooking the fact that there were severe stresses and strains on the Canadian oil industry at present, simply because the rate of new discovery had exceeded the rate of increase in demand. But this was largely a question of distribution.

Large though the expansion of Canada's oil production had been, only a small percentage of the known oil potential had been developed. By 1980 Canadian output might well be about 3 million barrels per day, more than six times what it is now.

H. W. Rocke, the president, thanked His Excellency for his very inspiring speech. His Excellency had mentioned Canadian crude oil production. Canada also had, except for the United States, the largest refining capacity among the countries in the free world.

Many members of the Club had been privileged to go to Canada and had seen for themselves the phenomenal growth of the oil industry there. Their visits, and those of the trade delegation to which His Excellency had referred, had built up many business relationships, by reason of which our ever close ties with Canada had become even closer.

Approaching the end of his term of office of the Club, Mr Rocke said that it had been a great honour and a great pleasure to be the president of such a successful and happy Club. He would always retain the happiest memories of his period of office, and he wished his successor an equally happy time. Also he wanted to express publicly his sincere thanks to his various committees and to the secretary of the Club, F. H. Coe (applause), for all the help they had given so willingly during his two years of office.

The president then proposed the toast *The Guests*, and on behalf of all the members of the Club he extended a hearty welcome to them, particularly those from overseas. It was his sincere wish that they would enjoy themselves as much as the Club enjoyed their presence.

There were so many distinguished guests present that he could only refer to a few. They were delighted by the presence of His Excellency the High Commissioner for Canada, and also extended a warm welcome to the Rt Hon. Reginald Maudling, M.P. All were delighted and were indeed honoured by his presence. They knew that he had been having, and was still having, a very strenuous time, and the fact that he had managed to be with them was very much appreciated. They could understand that perhaps he might have preferred to be elsewhere, continuing his important discussions which meant so much to us all. Everyone had admired his untiring efforts in connexion with his free trade negotiations, and it was their very sincere hope that those negotiations would be resumed at an early date and might be brought to a successful conclusion. They wished him well.

Among other welcome guests were Sir Reginald Ayres, K.B.E., C.B., and K. L. Stock, C.B., from the Ministry of Power; C. M. Vignoles, C.B.E., president of the Institute of Petroleum; C. S. Garland, representing the National Union of Manufacturers; G. H. Thorne, representing the Council of British Manufacturers of Petroleum Equipment; H. C. Westall, immediate past-president of the National Lubricating Oil & Grease Federation; and the chairmen and managing directors of oil companies and of companies in the allied industries.

The Rt Hon. Reginald Maudling, M.P. (Paymaster-General), responding, said "How could we possibly have reached our present standards of living without the fantastic contribution of the oil industry over recent years?" So great was their contribution to the standards of living of everyone in the western world that he was moved to make one or two comments about the industry. He admired not only their

immense progress, but also their closely competitive nature. The more the industry could do to emphasize the competitive nature of its business, the better, both for producer and consumer, because there could be no doubt that the oil industry provided one of the most remarkable examples in the whole history of the country of how private enterprise could progress and expand; and it was to the benefit of the whole community.

A most interesting phenomenon in recent months had been the extraordinary expansion of the use of oil in the United Kingdom, at a time when the demand for energy had been rather slack. The demand had risen very sharply, and it had caused people to suggest that restrictions should be placed on the use of oil as fuel. Her Majesty's Government did not accept that thesis. They believed that the fundamental principle of any sound fuel policy was to give the consumer the right to choose the sort of fuel that suited him best. In present circumstances maybe that was likely to lead to very severe competition with the type of fuel produced in Britain, which was obviously an important matter both economically and strategically. But he felt people made a mistake in saying that oil was an import; the facts showed that oil represented one of our great exports.

Nevertheless, we must make the best use of our domestic products. But surely the deduction must be, not to restrict in any way the choice of the consumer to use what he considered to be the most efficient source of energy for his purposes, but to develop more and more the efficient use of sources of energy, and particularly the use of British coal. The total demand for energy in Britain was bound to expand so fast that, even with atomic energy, we could do no more for some years than try to reduce the total of the expanding gap. Although in the last twelve months or so we had seen a much reduced demand for energy, compared with what we had expected, we must not be misled by temporary fluctuations. In the long term, if we had, as he believed we should have, an enormous expansion of the British economy, we were bound to have a very large expansion in the demand for energy, and that must mean a very large expansion in the demand for oil.

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Middle East Oil Production

	October	*Jan.–Oct.*
	Tons	
Iraq Petroleum Co. Ltd ...	2,189,805	18,528,049
Basrah Petroleum Co. Ltd ...	1,033,427	8,980,062
Mosul Petroleum Co. Ltd ...	111,790	1,081,556
Qatar Petroleum Co. Ltd ...	650,241	6,629,368
Iraanse Aardolie Exploratie en Productie Mij	3,341,000	33,188,000
Kuwait Oil Co. Ltd	6,250,892	56,964,443
	Barrels	
Arabian American Oil Co. (Saudi Arabia)	32,408,617	307,385,261
Bahrain Petroleum Co. Ltd ...	1,403,893	11,810,907

The refinery throughput at Abadan of the Iraanse Aardolie Raffinage Mij for October was 1,178,000 tons, the total for 1 January to 31 October being 12,604,000 tons.

Crude processed at Aramco's Ras Tanura refinery during October was 5,216,705 brl, the total for 1 January to 31 October being 52,036,510 brl.

Oil deliveries from Sidon, Lebanon, by Trans-Arabian Pipeline Co. in October were 11,304,322 brl, the total for 1 January to 31 October being 112,154,435 brl.

World Tanker Fleet

The world total of oil tankers in 1958 increased from a year ago by 3,652,000 tons gross to a total of 33,590,140 tons gross, according to *Lloyds Register of Shipping Statistical Tables*, based on the situation in the Register Book of July of last year. This world tanker total represents 28·5 per cent of all steamships and motorships in the world, as compared with 27·2 per cent in 1957. The figure consists of 18,363,898 gross tons of steamships and 15,226,242 gross tons motorships.

Great Britain is the leading country of ownership with a total of 814 vessels of 5,928,566 gross tons, followed by Liberia (362 of 5,618,736 tons), Norway (513 of 5,353,613 tons), and the United States (468 of 4,109,431 tons). The nation showing the largest increase in tanker ownership over the last twelve months is Liberia with an additional 1,476,000 tons. The next countries in order of succession are Norway and Great Britain, with increases of 607,000 and 343,000 tons respectively. Further details can be seen in the table below.

World Tanker Fleets 1958

100 *gross tons and over*

Country of ownership	*Number*	*Tons gross*
Great Britain and N. Ireland ...	814	5,928,566
Other Commonwealth	125	367,464
United States	468	4,109,431
Argentina	56	336,498
Belgium	10	110,960
Brazil	34	162,935
Chile	3	23,702
China	22	66,217
Costa Rica	3	17,747
Denmark	69	685,651
Egypt	2	16,085
Finland	21	156,937
France	148	1,565,554
Germany	101	421,039
Greece	34	190,266
Honduras	11	126,725
Iceland	4	13,878
Indonesia	1	167
Irish Republic	3	15,146
Israel	4	34,271
Italy	186	1,497,934
Japan	274	1,038,873
Liberia	362	5,618,736
Mexico	18	118,048
Netherlands	149	1,186,099
Norway	513	5,353,613
Panama	188	2,323,712
Peru	9	21,050
Philippines	5	3,711
Poland	8	39,950
Portugal	12	80,054
Russia (U.S.S.R.)	78	230,744
Spain	51	334,617
Sweden	163	1,080,662
Turkey	14	64,835
Uruguay	5	23,847
Venezuela	27	146,562
Yugoslavia	5	24,007
Others	23	53,847
World Total	4,023	33,590,140

Lubricators—the Craftsmen of the Industry

NLOGF Dinner

H. C. Westall
NLOGF chairman

Members and friends of the National Lubricating Oil and Grease Federation met at Grosvenor House, London, on 5 November 1958 for their annual dinner, the chair being taken by H. C. Westall, the Federation chairman. Guest of the evening was C. M. Vignoles, C.B.E., president of the Institute of Petroleum.

Proposing a toast to the Federation, **Mr Vignoles** said that the art of lubrication was discovered by primitive man and that those present were the inheritors of the oldest traditions of oil in the service of man. Some of the firms represented were very much older in origin than the oil industry as we spoke of it to-day. That was only an upstart of the last hundred years.

It was the lubrication specialists who had produced some of the most remarkable developments. Drawing on their accumulated knowledge from the past, as well as on the wonderful properties of petroleum itself, the lubricators might still be described as the craftsmen of the industry and guardians of some of the most subtle trade secrets.

Nowadays they all belonged to one great industry which had already played a part in almost all the important modern advances in our material well-being, and an industry on which heavy responsibilities would continue to rest in the future. In the last twenty years particularly, oil had been the means of accomplishing an astonishing volume of new industrial growth, and in an ever increasing variety of uses.

Speaking of oil as a fuel, Mr Vignoles said that most striking advances had been made in many spheres of utilization. In the field of lubrication the extensions had been at least as striking and, of course, far more numerous. We need only point to such things as the extraordinary development in aircraft over the past twenty years, or the British lead in the exploitation of nuclear energy, to indicate achievements in lubrication which were unparalleled in history.

In the last year the western world had experienced a slowing down in the rate of economic expansion. So far as we in Britain were concerned, this process might well be thought of as a phase of consolidation, in which inflation had been firmly checked, and there had been a continued increase in our standard of living, accompanied by only a small increase in unemployment. There was little doubt that we should again see the British economy gathering pace. We had an immense and growing stock of first-class capital equipment of all kinds and we had great resources of technical skill and managerial ability. We were committed to the policy of economic growth to achieve higher standards of living: the Common Market and the Free Trade Area would provide a new competitive spur to progress; and, beyond Europe, the less developed parts of the world would provide an ever growing market for the goods which Britain could produce.

But in order to take advantage of these opportunities we should need more and more energy to drive the wheels of industry. It was certainly impossible for coal production to keep pace with the coming growth in the demand for energy; and it was unlikely that nuclear power would be able within the next twenty years to make more than a minor contribution to our new requirements. So most of the increase must come from oil. This represented a great challenge, as well as a great opportunity, to the oil industry. Mr Vignoles had no doubt that it would be fully met.

In the more distant future we all anticipated that nuclear power would contribute more and more. It might well be that as the years passed the pattern of oil consumption would alter radically from what it was to-day, and that as the application of nuclear power widened we should have to develop new uses for some existing oil products, or perhaps regard oil more as a basic raw material for the production

Cartoons by Fred May, M.B.E.

of other new substances, as we did to-day in the petrochemical industry. But, concluded Mr Vignoles, the very oldest application of oil in all its forms was lubrication, and it would be with us until the end of time. The members of the trade rested on one of the few certainties in an uncertain world—that, whatever else happened and as long as our planet lasted, solid would continue to move against solid.

H. C. Westall, the chairman, responded and, in thanking Mr Vignoles for his speech, said that the words of a man with such a wealth of experience in the trade must always be of great interest wherever oil men met together.

When he had taken office a year ago, he continued, we were all recovering our breath after the Suez crisis; now we were wondering what the outcome would be when matters were finally resolved in the Middle East. The troubles of that area were of profound interest to the oil industry of Britain in so far as they might influence supplies of crude and refined products. The economic and social advantages brought to those areas by the producing companies were a model of which the industry could be proud. In addition, their revenue from oil was an important factor.

It was to be hoped that those Middle East countries who were fortunate enough to have saleable surpluses of oil would realize that unless their oil was flowing it might be a very doubtful asset which might even become a liability should it attract the covetous glances of a more powerful and unscrupulous neighbour. The oil must flow from producer to user on fair and equitable terms, and that also applied to the countries through which the oil had to pass.

Speaking of the Federation, Mr Westall said that in the past tribute had been paid to the men who had built up the Federation. As a sign of their appreciation, three of their "elder statesmen"—V. F. Eberle, Dr E. R. Redgrove and J. Russell Knowles—had been made Honorary Members (applause). It was pleasing to see Dr Redgrove and Mr Russell Knowles present; and it was regretted that Mr Eberle was unable to be there also.

K. G. Pratt, vice-president of the Federation, proposed a toast to the Guests and Visitors and said that, appreciating that the guests would include representatives of some of the international oil companies, he had made some research into the Oxford Dictionary. He had found "Shell" and "Gulf", but the nearest he could get to "Mobil" was "Vacuum", while "Esso" was not there.

K. L. Stock, C.B., of the Ministry of Power, responding to the toast, referred to the co-operation which had existed for so many years between the Federation and his Ministry. It led him to pay tribute to Mr Duff. It was the first occasion on which he personally had had an opportunity to do so, he said, and he felt it was appropriate. The Ministry owed him a great debt, and Mr Stock suggested that the industry did also, for devoted service to his country in the Lubricating Oil Pool for the greater part of the war period and for years afterwards; and, in spite of poor health, he went on again during the Suez crisis. His service was extremely valuable. One was sorry that he was not able to be present that evening.

New Officers

Officers appointed by the Federation for the ensuing year are: president, K. G. Pratt (*Alfred Hopps, Sons & Co. Ltd*); vice-president, N. K. Worters (*James Arnott & Sons Ltd*); honorary treasurer, G. W. Hawkins, F.C.I.S.

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New Fuelling Facilities at London Airport

In 1946 Shell-Mex and B.P. Ltd started an aviation fuelling service at Heath Row behind a card table in the police hut. The equipment consisted of five fuellers previously owned by the RAF and five storage tanks with total capacity of 60,000 gallons.

On 26 November 1958, Airey Neave, Joint Parliamentary Secretary, Ministry of Transport and Civil Aviation opened new fuelling facilities at the airport built at a cost of over £600,000. These facilities, at the new storage depot at Perry Oaks, on the west side of the airport, are the third such facilities opened by the Company at Heath Row. Total storage capacity has been increased to more than a million and a half gallons.

Such is the transformation in Shell-Mex and B.P.'s facilities at the airport since 1946. The Company now fuels four out of every five airliners landing there, and is operating fuellers of nearly 6000 gallons capacity with others of 10,000 gallons now on order.

C. M. Vignoles, C.B.E., the managing director of the Company, said that the new facilities just opened completed the first phase of Shell-Mex and B.P.'s plans for the airport. With the advent of the bigger jet airliner the demand for fuel would continue to rise sharply; by 1962 it was expected to be over twice the present figure, and by 1966 more than three times. To maintain a sufficient stock on the airport to provide for consumption of this order it would be necessary to have no fewer than 150 four-thousand gallon bridging tankers delivering at the airport every day during the summer peak periods.

To overcome the consequent congestion of road traffic it was intended to replenish the main storage tanks by pipeline. With this end in mind the Company will seek the sanction of Parliament to a private bill wnich, if passed, would permit the building of two six-inch pipelines bringing fuel from storage eight miles away at Walton-on-Thames.

As a concluding picture of the future Mr Vignoles said that in time some kind of hydrant system would be necessary at the airport, to enable airliners to pull in and be filled up.

U.K. Manufacture of Oil Well Control Equipment

Cameron's Operations at Leeds

About three years ago Cameron Iron Works Ltd, an affiliate of Cameron Iron Works Inc, of Houston, Texas, started full-scale manufacture of oil well control equipment at Leeds in premises previously occupied by Bofec Ltd. It was not long before those premises became inadequate and a larger and modern factory was built at Stourton, Leeds, on a site providing plenty of space for expansion. Recently we were privileged to visit this factory and examine the facilities installed.

The main factory building consists of two well-lit bays, a tool room extension, and an office block along almost the complete length of one side.

The manufacturing bay, 80 feet wide and 300 feet long, is equipped with an excellent selection of machine tools, including automatic lathes, drilling machines, presses, broaches, and so on. One end of this bay serves as the reception area for incoming materials and large doors enable materials which are to be stored under cover, or which are to go direct into use, to be brought in on lorries or fork-lift trucks. This bay is fitted with electrically operated travelling-cranes for the transport of pieces of manufacture from machine to machine or to storage. Electric power, compressed air, and water services are distributed through underground channels to facilitate access. The main stock room is at the farther end of the bay giving a direct run from intake to store as work proceeds.

An extension of the manufacturing bay is used as a tool room and is furnished with the necessary precision machinery for the making of tools, jigs, and fixtures necessary for the manufacture of the Company's products.

The second bay, 60 feet by 325 feet, includes within its area the inspection Department and the display area where are shown typical examples of Cameron products in cut-away sections. This bay also includes the shop administration offices which incorporate accommodation for the production superintendent, the chief inspector, the Shipping Department, and the production control and foremen's office.

The office area includes, in addition to the normal administration offices, two drawing offices, one for design work and the other for jig and tool planning.

A simulated blowout at the Leeds factory

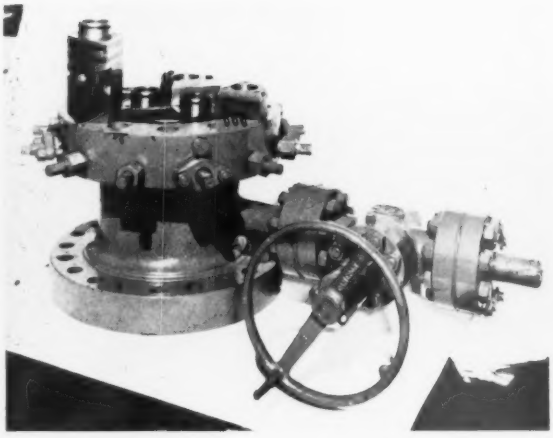
Already the manufacturing bay is becoming too small for the expanding operations and a new 60 x 350-foot bay is visualized. When this new bay is completed, the 60 by 325 foot bay will be used as a manufacturing bay with machine tools devoted to the production of the type "F" valve and the type "F" blowout preventer.

In addition there is a separate building providing canteen, first aid, and similar facilities for a total staff of approximately 200.

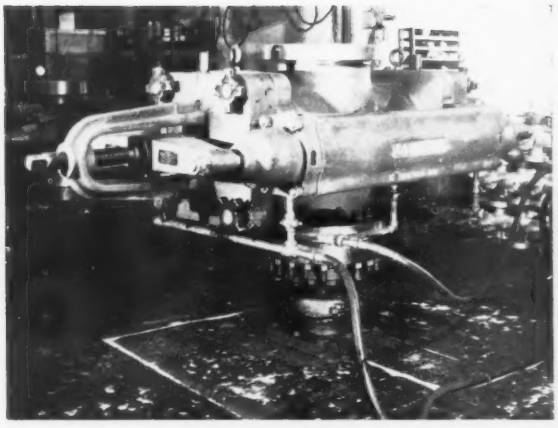
Equipment from the Leeds factory is shipped to all parts of the world, and at the present time the Company is developing prices and deliveries which are likely to be attractive to the parent company in the U.S.A.

During the visit a special high-pressure (15,000 psi working pressure) tubing head and Xmas tree was going through the shop to meet an urgent requirement in a Continental oilfield. Full details had only been brought back that morning by the general manager, who had flown specially to the field, and it was intended that the equipment would be shipped three days later.

The products manufactured by Cameron can be said to cover all equipment needed to control an oil well, ranging from blowout preventers to completion strings and including



Casing head for a 4-string completion. The location of the four tubing strings is clearly seen



A type QRC 16-inch blowout preventer under test at high pressure in the Leeds factory

weight indicators, mud line valves and pressure gauges, tubing and casing heads, and Xmas trees. All these products are manufactured at the Leeds factory with the exception of the "SS" (Space Saver) blowout preventer and the lift plug valve.

Among the newer products which were seen in course of manufacture and which exemplify the latest types of the Company's goods are those described below.

"F" Type Blowout Preventer

This latest type of blowout preventer has been designed to meet the need for protection against the higher pressures encountered as wells go deeper. It is intended to control working pressures of up to 15,000 psi wp and the 20-inch model will accommodate rams of up to 13⅝ inches in diameter. The ram is oval in section, like the "SS" model, and the Hycar oil-resistant packing rubbers are easily replaced if necessary. Pressure on the rams is supplied through a balanced system necessitating a hydraulic operator on one side of the preventer only. Rams are easily removed, access being simplified by the provision of hinged bonnets, and only one locking screw is required to manually close and lock both rams.

Although some of the larger size preventers are being manufactured from castings, which will be purchased in the U.K., ultimately all ranges will be manufactured from forgings. At present it is necessary to import from the Company's U.S.A. plant the intricate split die forgings ensuring consistent grain flow with the contour of the equipment, as forging facilities of this type are not available in the U.K.

Rotating Valve Seat

As the result of considerable research it had been established that the down-stream seat of valves showed the greatest wear and always at the same point. This was at the point of ultimate closure or first opening. To overcome this, Cameron developed a device whereby every time the valve is closed the seat is rotated a fraction of a turn and a new surface presented at the point of greatest wear.

Multiple Completions

Equipment for dual and triple completions using parallel tubing strings has been manufactured by Cameron for a considerable period and the Company's closed-pressure completion method has been expanded to provide well-head equipment to suspend and seal the strings. Tubing strings may be raised or lowered or pulled individually.

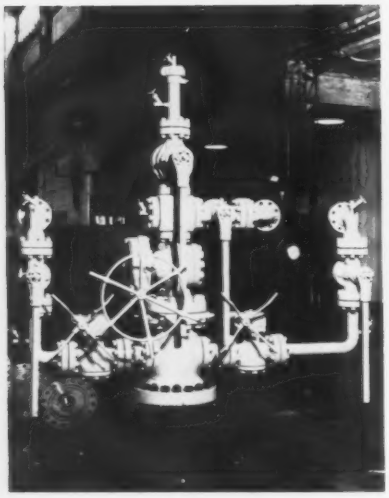
More recently the Company provided the equipment for the first ever four-string completion by the CATC Offshore Group in the Gulf of Mexico. A brief description of this was given on page 348 of our October 1958 issue and recently the film *Four Deep* of this completion was shown to an interested audience in London.

So far no four-string equipment has been manufactured in Leeds but, should the demand arise, there would be no delay in meeting it.

A general view of the 80 by 300 foot bay with the shop administration block and testing and display area in the background

Testing

All equipment manufactured in the Leeds factory is subjected to a 100 per cent check in order to ensure that it is correct in every detail. Most of this examination is carried out in the special inspection bay where assembled Xmas trees, well heads, blowout preventers, etc, can also be tested at pressures up to 35,000 psi. In the testing of Xmas trees and well heads, a fluorescent dye is added to the water to ensure that even the smallest leak at any point cannot escape detection. Here also tubing slips can be



(Above) *An "F" type preventer with ram removed to show ease of access.* (Left) *A modern Xmas tree under test before shipment to the Middle East*

subjected to a pull of up to one million pounds and/or in excess of any known casing joint strings.

In the grounds is a blowout preventer demonstration stand to simulate a blowout at 2500 psi controlled by a 7-inch 10,000 psi wp type "F" preventer. The pressure is controlled and released through the preventer by 5-inch 10,000 psi wp type "F" hydraulically-operated valves. The valves and preventer are all operated by remote control. The blowout is made with a combination of compressed air and water and during our visit, the flow was completely shut off in a few seconds.

Stocks

A well-filled stock bay ensures that there is no shortage of the normal ranges of equipment to meet almost any demand. In addition to Cameron's own manufactures, a good range of valves made by other firms is kept to meet the needs of customers who wish their Xmas trees, etc., to be so fitted.

* * *

Petroleum in Parliament

Oil Discharge

On 5 November Mr Neave, Joint Parliamentary Secretary to the Ministry of Transport and Civil Aviation, said in answer to a question on the suggested provision of aerial patrols for the detection of ships that pumped out their bilges too near the shore, that Service aircraft already kept a watch on such activities in the course of their normal duties. This arrangement had been in successful operation for a number of years and the expense of providing special air patrols would not be justified.

Oil-Burning Installations

On 10 November the Paymaster-General was asked what enquiries had been made into the possibilities of replacing oil-burning installations by those burning coal, so that the surplus coal now available could be utilized and the cost of imported oil saved. In a written reply it was said that it was not considered that the present temporary surplus of coal, judged in relation to the cost of imported oil, warranted any departure from the Government's policy of a free choice of fuels for consumers according to their particular needs of cost and efficiency.

Diesel Exhaust Fumes

In answer to a question on 18 November which asked what progress had been made in ascertaining means of purifying exhaust fumes prior to emission, the Parliamentary Secretary to the Minister of Works informed the House that the DSIR had done no research on the purification of exhaust fumes from diesel-powered road vehicles. Results of work carried out elsewhere had shown that the greater part of the smoke can be prevented by proper adjustment, running, and maintenance of the engine.

The Medical Research Council had no evidence at present to suggest that exposure to diesel fumes is a contributory factor in the causation of cancer.

Oil (Dollar Imports)

In a written reply on 17 November the Secretary to the Treasury said that in the twelve monthly periods July–June 1955–56, 1956–57, and 1957–58, the proportion of oil imported into the U.K. which was purchased for dollars was 16 per cent, 28 per cent, and 13 per cent by value respectively.

Oil Companies Materials Association

The recently formed Oil Companies Materials Association represents the formal constitution of the old Oil Companies Materials Committee.

For a number of years quarterly classified lists of the value of materials and equipment purchased by the petroleum industry have been published. These have been prepared by the Secretariat of the old OCMC, a task which will now be taken on by the new Association.

OCMC was an informal body consisting of representatives from all the main oil companies operating in the U.K. It came into being early in the last war at a time of materials shortages and "priorities", and was in fact originated at the suggestion of the Ministry of Fuel and Power. Since the war it has concentrated mainly on preparing a range of standard specifications of petroleum equipment largely under the auspices of the BSI, and in addition the collection of industry statistics.

R. C. H. Toye was one of the original members of the OCMC, and for the past several years had been chairman. At a farewell lunch given to him by OCMC members, he wished every success to the new Association and expressed a personal hope that the co-operation between members on matters of standardization would be even more extensive than hitherto. After recalling the chaotic situation early in the last war, when oil companies encountered difficulties in nomenclature and practice comparable to those experienced by the builders of the Tower of Babel, he recommended that the subject should be considered at four distinct "levels"—first, within a company; secondly, between companies (*ie* within the oil industry); thirdly, between industries; and lastly, between countries (*ie* internationally).

Within each company, he maintained, one of the functions of management was to reconcile the differing viewpoints of engineers, buyers, storekeepers, accountants, and "pure" administrators, when considering standardization of materials and equipment. Without this lead the subject could never be properly organized.

Between companies, Mr Toye stressed that there must be agreement upon the objectives of co-operation, and a forum at which these matters could be discussed, away from the stresses of competition. He felt that OCMA would provide the opportunity for such discussion. He urged support for the three "S's" of the BSI, namely Specification, Standardization, and Simplification, and suggested a fourth "S"—"Scheduling"—to cover uniformity in cataloguing and coding of materials.

Between industries Mr Toye underlined the importance of using the forum provided by the BSI. Here manufacturers could be drawn into consultation and he felt sure that much assistance would be given by the Council of British Manufacturers of Petroleum Equipment. He urged further co-operation with associations having similar interests to OCMA, such as Engineering Equipment Users Association, and recommended that the Institute of Petroleum be kept better posted than hitherto of the objects and achievements of the Association.

Lastly, between countries Mr Toye recommended full support of the BSI in their work concerned with the International Standards Organization, and also stressed the great importance of developing contacts with the American Petroleum Institute.

Registered office of the Association is Cecil Chambers, 86 Strand, London, W.C.2, the secretary being H. J. Herbert.

NEW IP PUBLICATIONS

Competitive Aspects of Oil Operations

This book, published early in December, contains the seven papers presented at the 1958 Summer Meeting of the Institute together with full reports of the discussions on those papers.

Opening with a paper on competition in the modern economy, by P. W. S. Andrews of Nuffield College, and concluding with one on crude oil prices, by David Ovens, then of *The Economist*, the intervening papers cover all aspects of the industry. Thus, from the structure of the industry, the theme of competition is followed through the various phases —oil search, research and development, product quality, and marketing.

A mine of information and a valuable contribution to the industry's literature, the price of this 200-page book is £1 10s. (£1 5s. to IP members) post free.

IP Tanker Safety Code

This code, which is the fifth part in the IP series of Model Codes of Safe Practice in the Petroleum Industry, gives a guide to safe operational procedures in ships which carry petroleum cargoes. Although it is mainly applicable to the larger bulk carriers, the principles laid down may be applied to the small self-propelled and non-propelled craft employed in marketing, distribution, and in certain production activities.

The code is not concerned in any way with navigation and, as is usual in publications of this nature, indicates minimum safety requirements.

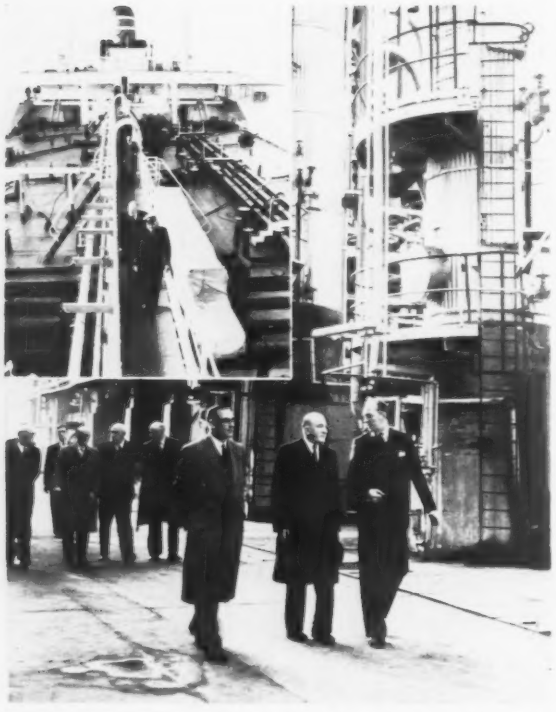
During the preparation of the Tanker Code a great deal of time was devoted to two particularly important subjects, the first being smoking and the use of naked flames and, the second, tank cleaning. In forming their recommendations on smoking and the use of naked flames the compilers had the benefit of knowing the results of recent tests on the occurrence of gas on tankers both during loading and discharging and also during tank cleaning periods and ballasting. They were thus able to come to some interesting conclusions as to when and where smoking could and could not be safely permitted and these conclusions are set out fully.

Explosions and ensuing fires on bulk carriers at sea while tanks were being cleaned and alongside these vessels have received considerable publicity in the press. The methods which may be adopted to carry out safely a tank cleaning operation have been laid down clearly and it is with some confidence that the compilers of the code now believe that if the simple instructions given in the code are adhered to, there need be no reason to expect any further catastrophes.

As well as chapters on smoking and naked lights and on tank cleaning, the code is fully informative on the loading and unloading of petroleum (and allied operations), on ship-to-ship transfers of petroleum, on packed cargoes, and on fire precautions. A further chapter gives the general precautions to be observed on any petroleum-carrying vessel.

As with previous Codes, the Tanker Code is printed in loose-leaf form to facilitate amendment if required. Copies are obtainable from the IP offices, the cost of the Code alone being 12s 6d post free. A loose-leaf binder to hold several Codes is also available at 15s 6d post free.

Notes of the Month



Lord Mills (centre) passing the catalytic cracker during his tour of inspection, and (inset) the Minister on the "cat walk" of the British Valour *with her Master, Captain G. E. Hodgson*

Lord Mills at the Kent Refinery

On 14 November Lord Mills, the Minister of Power, paid a visit to the BP Kent Refinery at the Isle of Grain. He was accompanied by Sir Reginald Ayres, deputy secretary, Ministry of Power, and O. Francis, under secretary, gas division, Ministry of Power.

The Minister commenced his tour of inspection at the adjacent works of the South Eastern Gas Board which are to be the site of the plant for the gasification of oil supplied from the Kent Refinery, as described in the Report of the Gas Council and reviewed in the December issue of the *IP Review*. Here he was met by W. K. Hutchison, chairman of the South Eastern Gas Board; Sir Harold Smith, chairman of the Gas Council; H. E. Snow, a deputy chairman of BP; J. M. Pattinson, a managing director of BP; and Dr Tait, manager of the refineries division of BP's refineries and technical department. After the inspection of the gas-from-oil plant the official party visited the main installations of the BP refinery itself and went aboard the 32,000 ton tanker *British Valour*.

Unique Oil Discovery in Venezuela

A party of scientists from three affiliates of Standard Oil Company (New Jersey), has begun an intensive examination of a remarkable oil deposit in the delta of the Orinoco River in Eastern Venezuela.

The oil is a mere five to ten thousand years old, which means that it is still in the embryonic stages of its development. Oil produced from the average commercial well is generally more than ten million years old.

This fortuitous discovery, according to Standard Oil, has provided the first opportunity to observe nature in the act of creating an oil reservoir. The presence of oil-like hydrocarbons in sediments has been noted before, but this is the only case known in which hydrocarbons have actually begun to collect in a stratigraphic trap. The deposit is thus the most conclusive evidence to date that the oil-forming process is still going on, and that oil is not an exhaustible resource but is constantly being renewed.

It is hoped that knowledge gained of the conditions in which this phenomenon occurs will enable future oil explorers to pin-point more accurately the places where marketable oil is likely to be found.

Investigation of the embryonic oil is being conducted jointly by the Jersey Production Research Company of Tulsa, Oklahoma, and Esso Research and Engineering Company of Linden, New Jersey, and by Creole Petroleum Corporation, Jersey's Venezuelan affiliate.

The base for the six-week study project has been established at a jungle outpost near the village of Pedernales. Provisions and tons of special research equipment were transported to the camp in early October. This is probably the first time that such a fully-equipped laboratory has been set up in the field to permit analysis of sediments before any deterioration can occur.

Some eight boreholes are being sunk at the site of the oil trap. Rock samples are being taken at various intervals, and continuous cores will be taken once the oil sand is reached at a depth of about 115 feet. In addition to the sediment samples, water and gas samples are being collected whenever possible.

All cores are being examined in the field laboratory, and some will be sealed with plastic and sent to the United States for further studies. Samples for geochemical research are being canned in alcohol to protect them against decomposition by bacteria.

Despite the extensive field facilities set up, many tests will still have to be performed in the laboratories at Tulsa and Linden, and it will be some months before the results of the project are known.

New Ruhr Refinery

Work officially began on 18 November on the site for BP's new German refinery near Dinslaken, some 15 miles north of Duisburg. The new refinery will have a throughput capacity of 4,400,000 tons a year (100,000 barrels a day), and is due to be completed before the autumn of 1960.

BP already has two refineries in Germany, one of 2,000,000 tons a year capacity at Hamburg, the other a smaller one of 220,000 tons.

An artist's impression of the refinery, looking west

The wide range of products from the new refinery will include the highest grade motor spirits, aviation turbine fuels, marine diesel oils, gas oils, fuel oils, and petroleum chemical feedstocks. The latter are to be supplied to new petroleum chemical units being built adjacent to the Bayer plant at Dormagen, near Cologne. This plant will be operated by Erdolchemie G.m.b.H., a company jointly owned by BP Benzin und Petroleum A.G. and Faben Bayer A.G., Leverkussen.

In the building of the new refinery maximum use will be made of German materials and contractors and a number of German firms are being engaged for the erection of plant. Ground clearance work on the 600-acre site has already started.

Crude oil will be supplied to the refinery by the Wilhelmshaven—Ruhr pipeline now being laid by a consortium of oil companies. The jetties at Wilhelmshaven will be capable of berthing tankers of up to 100,000 tons capacity.

The processing plants in the refinery will include two crude oil distillation units each of 50,000 barrels a day capacity, and a 12,500 barrels a day catalytic reforming unit, two 2400 barrels a day copper chloride units for treating aviation turbine fuels and other products, and a hydrofiner capable of handling 10,000 barrels a day of feed. The petroleum chemical plants of Erdolchemie will produce other high grade motor spirit components and these will be returned to the refinery for blending.

The refinery products will be blended by the most advanced form of line blending, by which means products are continuously blended by pumping components under instrument control into a line which leads to the product storage tanks, thus resulting in savings in time and storage requirements.

A large part of the products will be distributed in Rhine barges, and a harbour, which will be connected by pipeline to the refinery, is to be built at the junction of the Rhine and the Lippe Seiten Canal, about three miles away.

Oil Development in the U.A.R.

The development of the United Arab Republic's oil industry was the subject of an article in the *Financial Times* on 18 November. It was reported that first priority had been given to the industry in the arrangements made recently for credit terms with the Soviet Union.

The plan for Egypt comprises an oil processing plant, expansion of the Government's Suez refinery, the extension to Alexandria refinery, and an oil exploration programme costing £E6m.

In the case of Syria the emphasis would be very largely on development of the Kertshuk area in the northern part of the country, where a new field, or an extension of the Iraqi fields, had been reported. The Government is to carry out all future oil exploration, with Soviet help. Plans include the building of another refinery, additional to the one at Homs now under construction, to be situated at El Kamashly, near the Kertshuk field. Additional projects include the laying of three pipelines: from the field to the Mediterranean; from Gims to Aleppo, and between Homs and Damascus.

Transport Services for Oilfield Equipment

Designed to transport heavy oilfield equipment over swamp land in the Niger Delta, a new type of trailer was shipped recently to the Shell-BP Petroleum Development Company of Nigeria Ltd.

The 28-ton trailer is fitted with 3 feet wide rubber and steel tracks, instead of normal pneumatic tyres. These tracks give a very low ground pressure of between 8 and 9 lbs per square inch fully laden, a remarkable figure, since the gross weight of the trailer is 44 tons.

A steel roller at the rear facilitates loading with skid-mounted oilfield drilling equipment, which is hauled on to the trailer by means of a winch rope from the tractor.

The main frame of the trailer is in the form of a water-tight box girder running the full length of the load-carrying platform to act as a support in the event of the tracks sinking in extra soft ground.

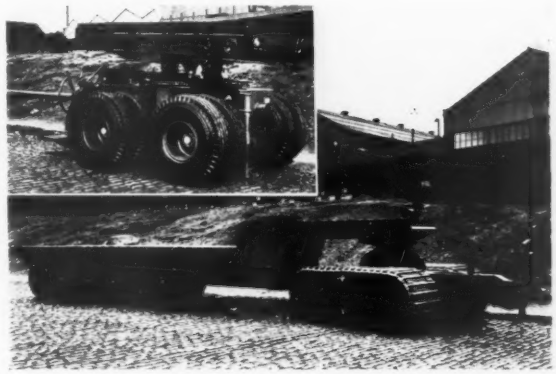
The forecarriage, which is of similar fully boxed construction, also forms the drawbar and is fitted with an ASE 36-inch Universal Fifth Wheel.

Another new item for use in transporting oilfield equipment is a steerable bogie, the first of its kind to be made in the U.K., and shipped recently to Compania Shell de Venezuela for oilfield use.

The bogie, of 20 tons capacity, will be used with an oilfield truck to transport a 133-feet high drilling mast weighing about 38 tons, as a complete unit, and will help to reduce rigging-up time to a minimum.

With mast loaded on truck and bogie, the outfit is approximately 145 feet long. In view of this, many adverse factors have had to be overcome in the design stages involving the elimination of bending loads and stresses of the mast whilst in transit.

Both the trailer and the bogie were developed by R. A. Dyson and Company Ltd, of Liverpool, in association with Shell engineers.



The 28-ton capacity tracked trailer and (inset) a general view of the steerable bogie, showing steering wheel at offside rear

British Faith *seen alongside the new deep-water jetty at Finnart*

New Finnart Jetty in Operation

The first crude oil cargo was discharged recently at BP's new tanker jetty at Finnart, on Loch Long. Two tankers—BP Tanker Company's 32,000 dw ton *British Faith* and a chartered vessel, *London Majesty* (18,000 dw tons)—unloaded between them some 47,000 tons of crude oil for dispatch by pipeline across Scotland to BP's Grangemouth Refinery on the Firth of Forth.

This event marks the coming into operation of BP's £2,000,000 project, started in May, 1957, to provide discharging facilities at Finnart for the largest tankers foreseeable. BP's original Finnart jetty, completed in 1951 and situated half a mile to the north of the new terminal, cannot accommodate tankers exceeding 32,000 dw tons.

111-Year-Old Candle Factory

The reconstructed and re-equipped Price's candle factory, founded in 1847 by a private Act of Parliament and now the biggest of its kind in the U.K., was formally re-opened on the 25 November, by the Mayor of Battersea, Clr C. E. Lang, J.P.

Designed to streamline production, the reconstruction and re-equipment scheme of Price's Battersea factory, alongside the Thames, cost over £250,000.

Modern candle production at the factory uses paraffin wax, supplied from both the Far East and U.K. refineries, as its chief raw material. Processing departments visited by the official party included melting and blending, and pouring and dipping. The latter are very old methods of manufacture, still largely used for altar candles and for certain types of art candles. Moulding is the method of production used for the great bulk of production throughout the world today.

A feature of the plant not to be found elsewhere in the industry is the extrusion section, based upon a production method introduced in 1950 which is still superior to any other and is applied either to powdered or to crushed wax.

The tour was completed by a visit to the art candle section, where the various ways of finishing this type of candle by dipping, surface printing, tapering and tip shaping, followed by banding and hand-polishing, were seen.

Helium Plant Contract Awarded

The Fluor Corporation, of Los Angeles, California, has been awarded the contract to design and build the U.S. Government helium plant, mentioned in the November issue of the *IP Review*, which is to be built in the Keyes field, Cimarron County, Okla.

The contract, on a cost-plus-fixed-fee basis, calls for work to begin immediately. Basic plant costs under the contract are estimated at $8,900,000, and the target date for the completion of the plant is August 1959.

The Fluor Corporation also designed and built a helium plant for the Bureau of Mines at Cunningham, Kansas, to meet emergency demands for the gas during World War II. This plant was dismantled shortly after the war when its supply of helium-bearing natural gas was depleted.

BP's New Tanker Terminal

Construction is well advanced at BP's new tanker terminal at Milford Haven, South Wales, and good progress is being made with preparing tank foundations and building tank bunds. Popton Fort immediately above the jetty is being rehabilitated for use as offices. Inside the fort foundations have been laid for five tanks, four of which will hold bunker oil and the fifth water. One and a half miles away earth bunds have been built around the sites on which eight large crude oil storage tanks will eventually be erected.

Aerial view of the conversion of Popton Fort into administration offices. The jetty can be seen in the background under construction

The new fractionating column recently delivered by road to Coryton as part of the liquefied petroleum gases recovery unit

New Unit at Coryton Refinery

Mobil Oil Company Ltd announce that Constructors John Brown Ltd are well advanced with the building of a large liquefied petroleum gases recovery unit at the Coryton refinery.

When the first stage of the plant is ready in January, Mobil Oil Company will be separating a substantial quantity of propane from the gases produced during normal refining operations. Later in the year the plant will also enable butane to be separated and stored for re-delivery.

Offer for Consolidated Refineries

Isaac Wolfson, The British Petroleum Company Ltd, and the Shell Petroleum Company Ltd announce that an offer has been made on behalf of interests associated with the Paz Oil Company to acquire the share and loan capital of Consolidated Refineries Ltd which owns the oil refinery at Haifa in Israel.

The Paz Oil Company is the name of the company marketing petroleum products in Israel, which was purchased by Iwol Investments Ltd (of which Mr Wolfson is chairman) from the Royal Dutch Shell and British Petroleum Groups of companies in the spring of this year. The capacity of the Haifa Refinery is about 4 million tons per annum, but it is at present operating only at about 1·3 million tons, for the Israeli market only.

This offer, which was made with the knowledge of the Government of Israel, has been accepted subject to contract by the British Petroleum and Royal Dutch Shell Groups of companies, which at present own the whole of the share and loan capital of Consolidated Refineries Ltd. Details of the contract are being worked out.

Israeli Products Pipeline

On 21 November the *Financial Times* reported that the Haifa-Tel Aviv products line had now been completed and was scheduled to go into operation a few weeks later. The six-inch pipeline would have an initial annual capacity of 570,000 tons. It would carry products for internal Israeli consumption, which had previously been supplied from the Haifa refinery by road and rail.

Oil Companies Equipment Orders

Figures compiled by the Oil Companies Materials Secretariat, and issued by the CBMPE, show that during the third quarter of 1958 orders for materials and equipment placed in the U.K. by oil companies were valued at £29,156,751. This compares with a corresponding figure in 1957 of £35,292,459. Declines were felt most markedly in tankage (by 84 per cent), and equipment for drilling and production (67 per cent). Other categories to suffer a drop in value for orders were tubulars, pipe fittings, and valves; pumps; machine and hand tools, etc; bulk chemicals; building materials and hardware; and commissary.

The value of orders increased considerably for metering and dispensing equipment, (by 71 per cent); railcars, road tankers, and aircraft refuellers, etc. (66 per cent); and exploratory equipment, (60 per cent). Increases were also noted in specialized equipment for oil refineries; drums, drumsheets, and tinplate; boilers, boiler house plant, etc.; electrical equipment; instruments, meters, and gauges, etc.; prime movers and compressors; ferrous and non-ferrous plates, etc.; automotive equipment; and laboratory equipment and chemicals.

The total for the first half of 1958 was £60,372,275 compared with £65,993,098 for the first half of 1957. The total for the whole of 1957 was £134,846,376.

	1958 *July–Sept.*	1957 *July–Sept.*
	£	£
Geophysical and other exploratory equipment, etc.	40,130	15,092
Specialized equipment for oil drilling and production including oil casing, tubing, etc.	1,510,147	4,644,404
Specialized equipment for oil refineries, etc. (not including pumps and valves)	2,068,172	985,247
Drums and can-making, filling and cleaning equipment, kerbside pumps, and other metering and dispensing equipment, ...	358,214	103,435
Railcars, road tankers, aircraft refuellers, etc.	114,519	38,825
Drums, drumsheets, and tinplate ...	1,983,672	1,148,230
Tankage (including tank fittings) ...	382,449	2,428,586
Tubulars, pipe fittings, and valves (ferrous and non-ferrous) ...	3,773,203	7,970,325
Pumps (excluding slush, oilwell, and kerbside)	419,474	555,174
Boilers, boiler house plant and accessories, etc.	63,915	35,971
Electrical equipment—motors, generators, transformers, etc. ...	1,857,054	1,834,324
Instruments, meters, and gauges, etc.	469,118	388,567
Prime movers and compressors ...	938,423	569,740
Machine and hand tools, welding and miscellaneous machinery and stores	2,060,481	2,412,642
Ferrous and non-ferrous plates, sections, sheets, and bars ...	3,154,547	1,670,142
Automotive equipment, all types ...	1,454,536	1,187,624
Laboratory equipment and chemicals, including hospital and medical supplies...	247,301	232,482
Bulk chemicals, catalysts, barytes, etc.	5,990,115	6,059,476
Cement and other building materials and hardware, including timber ...	773,356	1,138,448
Commissary, general requisities for office, warehouse, household, club and sports, etc.	1,497,925	1,873,725
	£29,156,751	£35,292,459

Plastics Survey

The *Financial Times* on 24 November, contained a supplement devoted to the plastics industry. In the space of twelve pages many facets of the industry in Britain were covered by means of contributed articles from people in the plastics field.

Examples of subjects discussed were: the history of plastics and their future, which showed that world production had grown from 20,000 tons in 1900, to 350,000 tons in 1939, and to 2,870,000 in 1953, the last year to be listed; the changing sources of raw materials; and a review of petroleum chemicals for plastics—the growing influence of new oil plants, by R. E. McOnie, manager, plastics and resins, Shell Chemical Co. Ltd.

A table accompanying the latter article listed plastic materials, main end-uses, and 1957 production tonnage. Further contributions covered the increasing use of plastics in building, insulating purposes, and aircraft design.

Libyan Exploration

BP Exploration Company has started drilling a test well at a new location in the Fezzan, Libya. The rig was moved to this site from Wadi Zachem No. 1 well in Southern Tripolitania, which has been plugged and abandoned at 3540 feet. Geophysical work is in progress near Tripoli.

Oil Research Unit Founded

Oil technologists and scientists of Hungary and East Germany are to collaborate in the development of research on lines already explored by Professor Jozsef Varga in the field of the hydrogenation of oil.

For this purpose the two countries have founded the Jozsef Varga Study Association under existing agreements for the integration of economic planning. The aim of the Association is to find methods of making applicable to mass production the Varga process for breaking down and refining by hydrogenation residue from tar and other by-products formed at middle pressure levels.

Known processes entail the use of considerable amounts of hydrogen at high pressure levels. The Varga process is expected to yield valuable results using relatively small amounts of hydrogen at middle pressure levels.

Achievement by Drillers at Nahorkatiya

Drillers of the Assam Oil Company at Nahorkatiya, Upper Assam, recently achieved a penetration rate close to the world record drilling speed.

The world record is believed to be 2305 feet of drilling in an eight-hour shift, at a well in the Los Angeles Basin in the U.S.A. The AOC drillers penetrated 2299 feet in a similar shift.

They also broke their previous record of the sub-continent —1708 feet in eight hours, set up at Well No. 35 at Nahorkatiya in August, 1958.

Well No. 36, completed earlier this year at a depth of 10,293 feet, was a producer. Well No. 37, which was spudded-in on 7 November, reached a depth of 6226 feet on the 17th and drilling is continuing.

Third 42,000 ton Tanker

The third 42,000 dw ton tanker for the BP Tanker Company was launched from Harland and Wolff's shipyard at Belfast on 27 November, with the name of *British Statesman*.

Imaginative Skill

Key to Industrial Efficiency

The man with the most highly developed imaginative skills would prove to possess the highest qualities of administration, said A. C. Durie, general manager-administration, Shell-Mex and B.P. Ltd, at the National Conference of the British Institute of Management at Brighton.

He said that these skills amounted to the ability to see when, where, and what form of action was needed over a part, or whole, of the enterprise, for where there was inaction there was ineffective administration. They included recognizing how such action in one part of the business might affect other parts, not only inside the organization but externally within the particular industry and the community. High quality administrative skills would largely overcome other weaknesses in the organization, for they would produce good results even from a second-rate system. But second-rate administration in any organization, good or bad, would never succeed.

The successful administrator might well be recognized, therefore, for his mental capacity rather than for his specialist or technical skills.

Dealing with the ways in which organization and methods can help the administrator, Mr Durie said that there must be effective line supervision in implementing the recommendations of organization and method surveys. It was here that the administrator must have the will and courage of his convictions to see that line action is taken, and where necessary to use the "push" process to achieve his objective.

Mr Durie believed that some people were administratively less successful than others because they did not profit from their experiences, and failed to realize what they were capable of doing. He stressed the value of experience, perfected by time, as a positive factor in developing administrative quality. Experience generated confidence and self reliance; it prepared the ground for courage and boldness.

The administrator's task was essentially a changing one for business never stood still, Mr Durie said in conclusion. Its forward movement could only come from imaginative decision and action within the administration, and the quality of that administration would decide how powerfully and efficiently and for how long the enterprise would advance.

Shell Art Exhibition

The Seventh Annual Art Exhibition staged by the staff of the Shell Group in London, was opened on 10 November by Sir John Rothenstein, C.B.E., Ph.D., Director and Keeper of the Tate Gallery.

The exhibition contained more than ninety works in various painting media. The range of subjects was extremely varied, landscapes, portraits, and abstract studies all being in evidence. Winner of a special award made by F. A. C. Guepin, a managing director of Shell Petroleum, for the best exhibit of any artist of under 30 years of age, was James Meller, a student apprentice studying architecture at Fitzwilliam House, Cambridge University. His prize-winning picture was an abstract entitled *Small Painting*.

Michael Cameron, the winner of the special award in 1957, gained the organizing art committee's prize for the best picture from anyone over 30 years of age. Mr Cameron works in the marketing operations department of the Shell Petroleum Co. Ltd and his entry was a water colour entitled *Builder's Yard, Romsey*.

The Shell tanker Axina, *one of a group of British flag* 18,000 *tonners with the "new look", sailed on the* 8 *November from Glasgow on her maiden voyage to Curacao.*

As regards propulsion and tank lay-out the Axina *is substantially the same as the "H" class* 18,000 *tonners but, as will be seen, the amidships structure has a marked degree of streamlining, with the after parts of the wheelhouse top, navigating bridge, and upper deck almost semi-circular*

New Zealand Mobilgas Economy Runs

An Austin A.105 has been declared the outright winner, and also the winner of Class C, out of 30 competitors in the New Zealand Mobilgas Economy Run, held recently over a 784 mile course. This car achieved an mpg figure of 32·46 (57·02 ton mpg). Another British success was achieved by a Humber Super Snipe which won Class D with a figure of 20·95 mpg.

The results in the four classes were:—

			mpg
Class A (up to 1200 cc)	Volkswagen	...	50·59
Class B (1201–1725 cc)	Borgward Isabella	...	39·05
Class C (1726–2650 cc)	Austin A.105	...	32·46
Class D (2651 c.c. and over)	Humber Super Snipe		20·95

The New Zealand Mobilgas Economy Run is the tenth of a series of events which are held every year in many countries throughout the world. In six of them to date British cars have been declared outright winners, in addition to gaining many successes in their individual classes.

The purpose of these events is to demonstrate the fuel economy of which modern production cars are capable if properly fuelled and lubricated, well maintained, and skilfully and safely driven.

The ton mpg formula is used to ensure that all cars, irrespective of size, compete on equal terms for the outright winners trophy.

1959 British Mobilgas Economy Run

The dates for the 1959 Mobilgas Economy Run in Britain are Saturday 18 April to Wednesday, 22 April. The Hants & Berks Motor Club will organize this event once again under the International Sporting Code of the F.I.A. and the general competition rules of the R.A.C.

Entries this year will be restricted to modern standard production touring cars of British manufacture and origin, and will be divided into four classes as follows:—

Up to 1300 cc, 1300–1600 cc, 1600–2600 cc, over 2600 cc.

The regulations together with entry forms, can be obtained from Mr Holland Birkett, 228 Fleet Road, Fleet, Hants.

Electronic Radar Simulator

The Solartron Electronic Group Ltd have devised a highly interesting method of assisting in radar defence training. To maintain an efficient radar defence system continuous realistic training is necessary for personnel concerned, for without it emergency action may well result in chaos. The initial problem is that training with actual aircraft is impossible owing to immense cost factors and the dangers of collision and interference with civil air traffic.

To counter these difficulties Solartron have produced an analogue computer system which simulates both targets and radar stations. By a system of individual controls the approach of attacking "bombers" and the interception of "fighters" can be tracked on the screen, and offensive and defensive tactics can be devised in complete secrecy.

Thus, training is given with the minimum of cost, and no danger to life and property, and without the lengthy prior co-ordination measures required for live action.

The first of such equipment which were recently demonstrated at the new Solartron factory at Farnborough, Hants, has been manufactured for the Italian armed forces, and further supplies are to go to other West European powers.

Abu Dhabi Test Well

The drilling barge *Adma Enterprise* has now been moved to a new location in the Persian Gulf off Abu Dhabi and drilling of Umm Shaif No. 2 test well has started. This new site is about two miles west of Umm Shaif No. 1 well where an encouraging show of oil was reported in September, and which is still undergoing tests.

Around the Branches

BAHRAIN, ESSEX, FAWLEY, KUWAIT, LONDON, NORTHERN, SCOTTISH, SOUTH-EASTERN, SOUTH WALES, STANLOW, TRINIDAD, YORKSHIRE

London Branch

On 23 October, the members of the London Branch heard an excellent and witty paper by Professor E. S. Sellers, of University College, Swansea, on "The Petroleum Industry in 2000 A.D.

In introducing his talk the speaker ventured the statement that the expectation and investment in nuclear power had been, perhaps, rather too great: with the ever increasing traffic on the roads improvement of the latter might be considered to be a more pressing need.

Professor Sellers went on to discuss the question of oil reserves in some 40 or so years time. He quoted the views of two experts—Dr A. Lees of the U.K. and W. E. Pratt of the United States. Dr Lees calculated that in 2000 A.D. the reserves would be three-quarters of what they were at the present time, and Mr Pratt stated that they would be twice the present known reserves.

The speaker said that there was no doubt that 40 years hence the oil industry would still be of very considerable importance but the cost of the discovery of oil deposits would have increased greatly.

So far as education for the oil industry was concerned he forecast a much greater need for geophysicists and geologists in the future.

With the rapidly increasing standards of living of the people of Asia coupled with the demands of the rest of the world, more and more oil would be required and it was to be doubted, even with the possibility in 2000 A.D. of there being twice the amount of oil available as at present, whether there would be sufficient.

Professor Sellers also discussed the great importance that computers would play in the future oil industry.

Stanlow Branch

A joint meeting of the Branch with the N. W. Section of the Royal Institute of Chemistry was held on 16 October at the Lecture Theatre, Grosvenor Museum, Chester. The chair was taken by C. N. Thompson who introduced the lecturer, E. LeQ. Herbert, managing director of Shell Refining Co. Ltd, who presented his paper on "Technical Education and the Needs of the Petroleum and Petroleum Chemical Industries".

The lecturer said that the oil and petrochemical industries were confident that in the years ahead, sufficient raw materials would be forthcoming to meet all needs. More men, especially more managerial staff, would have to be educated to cope with the technological changes which were taking place.

Mr Herbert hoped that the universities would resist any pressure on them to turn out "narrow scientists" in great numbers, and would produce fundamentally well-educated technologists.

Speaking of the newly-established Diploma in Technology, Mr Herbert voiced the hope that the new Colleges of Advanced Technology would succeed in establishing this award at a high level. Quite apart from national need, it was a responsibility owed to the young men embarking on the courses.

Discussion on Mr Herbert's address was opened by Professor Frank Morton of the Manchester College of Science and Technology. In his view, the money provided by the Government, through the University Grants Committee, was not enough to meet immediate future needs for existing commitments, without considering any expansion. An urgent need was for halls of residence. Most students Professor Morton said, were in "digs"—often unsatisfactory ones.

Other speakers were H. D. Robinson, headmaster of Birkenhead School, F. Baird, headmaster of Helsby Grammar School, D. G. Cooper, head of the science department of Birkenhead Technical College, and Dr R. G. Larsen, manager of Thornton Research Centre. A vote of thanks to Mr Herbert was proposed by V. Biske, chairman of the local section of the Royal Institute of Chemistry.

Scottish Branch

A meeting of the Scottish Branch was held in the Recreation Hall, BP Refinery (Grangemouth) Ltd, on 20 November. Dr G. H. Smith, M.C., chairman of the Branch, occupied the chair and introduced the speaker, Dr A. Klinkenberg, whose subject was "Electrostatics and Explosive Hazards in the Petroleum Industry".

In his talk the speaker said that safety had always been a major concern of the oil industry and consequently the number of fires in refineries and installations were low. Certain of these fires were known to have been caused by an accumulation of electrostatic charges leading to a spark. It had been known for some time that certain operations employed in handling petroleum products, such as the pumping of a possibly strongly-charged product through a pipeline, might lead to the generation of electro-static charges.

The talk was illustrated by lantern slides and a film demonstrating some aspects of the experimental work, concluding with the propagation of a fire in a petroleum tank by electrostatic charges induced by pumping.

South-Eastern Branch

As the photographs on the opposite page show, the 1958 Annual Dinner and Dance of the South-Eastern Branch, held at The Tudor House, Bearsted, on 14 November was a huge success. Attendance was again a record and the organizers are to be congratulated on their arrangements. A short speech of welcome by the chairman of the Branch, J. R. Moore, was the only formality and after dinner Jo Blake took over with his band. Dancing continued with only one very brief interval until one a.m. There is no doubt that everyone present had had a thoroughly enjoyable time.

AT THE SOUTH-EASTERN BRANCH DANCE

Photos by George Sell

Left to right:—H. Kaye, G. M. Davies, T. G. Provest, E. LeQ. Herbert, Prof. F. Morton, Mr Martin
Mrs Kaye, Mrs Davies, Mrs Provest, Mrs LeQ. Herbert, Mrs Martin, Mrs Morton

Northern Branch

The annual dinner dance of the Northern Branch of the Institute was held at the Midland Hotel, Manchester on 14 November.

Unfortunately the chairman of the Branch, W. E. Huggett, was unable to attend owing to illness, his place being taken by the vice-chairman, T. G. Provest, who also read Mr Huggett's speech.

T. G. Provest and Mrs Provest, E. LeQ. Herbert and Mrs LeQ. Herbert receiving the guests

Mr Huggett mentioned the highly successful growth of the Institute from a membership of 188 in 1914 to the present number of over 3500. He said that he wondered whether the Institute was the only body to use in its title simply the name of a raw material; the Institute of Petroleum and not the Institute of Petroleum Industry. Others with less perspicacity might refer in their titles to an end product or an industry, but it was felt that the IP's choice of title was most foreseeing, now proving adequate to cover what was hardly envisaged in 1938—the manufacture of chemicals from petroleum.

The speaker went on to review the activities of the Northern Branch, whose membership had increased in number during the year from twenty to seventy, and gave an account of the enthusiastic opening of the Yorkshire Branch.

In conclusion Mr Huggett congratulated the Branch's immediate past chairman, Gill Davies, on his award of the MBE during the year under review.

E. LeQ. Herbert, who with Mrs E. LeQ. Herbert were the official guests, replied to the toast of "The Institute of Petroleum". Mr Herbert, also, referred to the growth of the oil industry in the U.K. since the Institute was formed, and how the expansion of the Institute's activities had kept pace with this growth. In this tremendous development, it was said, the north-west had played a most important part.

Tribute was paid to the planners and builders of the Manchester Ship Canal, for it was only because of the existence of the Canal that the north-western part of England had become one of the major areas of the petroleum industry in the U.K.

Mr Herbert reminded his audience of his own close association with these great oil developments over the past twenty years and expressed his pride in this. He congratulated the Branch itself, and the people of Manchester, on the important contribution each had made toward the growth of both the Institute and the oil industry.

* * *

Petroleum and the Automobile Market

A paper on "The Role of the Petroleum Industry in the Development of World Car Markets" will be read by Dr K. E. W. Ridler (*BP*) to the Automobile Division of the IME at 6 p.m. on 10 March. IP members will be welcome and should, if possible, notify the IME (1 Birdcage Walk, London, S.W.1.) of their intention to be present.

DSIR Report

The report of the Fuel Research Board, with the Report of the Director of Fuel Research, for 1957 has recently been published entitled *Fuel Research* 1957. Presented in its usual form and with its habitual complete coverage, the following sections are of particular interest to the petroleum industry.

Synthesis of Oil from Coal

With the rapidly developing use of nuclear energy it is now possible to envisage a future surplus of low-grade coal of the kind now consumed by power stations. Such coal could be converted into liquid fuels and town's gas by a combination of gasification and Fischer-Tropsch synthesis. The Ministry of Power have made a study of the economics of such a combined process and finds that with improvements in the individual steps and their proper integration, economic success should be possible.

The work at Greenwich on the Fischer-Tropsch process is largely directed to the further development of the liquid phase (slurry) technique of synthesis. Increased effort is also being directed to fundamental studies of catalysis with a view to the development of cheap but active and durable catalysts for the synthesis reaction.

Fuel Oils

Investigations have been continued into the changes that occur in residual fuel oils on storage, which lead to thickening and so make the oil difficult to pump. Study of the separation of emulsions of sea water in fuel oils by surface active agents has also continued. This investigation was undertaken to see whether the emulsions that are formed in ship's fuel tanks and in tankers when sea water is introduced for cleaning or ballasting, could be separated economically. When such emulsions are burnt in boilers the salt may damage the refractories and corrode the tubes. The study has led to a slight improvement of the best surface active agent previously developed and this is now being produced and sold commercially.

Sea Pollution

The work carried out at the request of the Ministry of Transport and Civil Aviation on the performance and improvement of oil-water separators was concluded during the year. It has been found that the size of the oil droplets reaching the separator is an important factor in obtaining the best results; the smaller the droplets the less satisfactory are the results.

Exhaust Gas from Motor Engines

The first phase of the road tests to determine the effectiveness of catalytic combustion as a means of reducing the combustible constituents of the exhaust gases from motor vehicles, has been completed. It was found that the catalyst did, on the average, reduce the percentage of combustible constituents quite considerably though often by very varying degrees.

Analyses were made of samples of exhaust gas from a random selection of private motor cars of different ages, in order to obtain indications as to whether the gradual replacement of older motor cars by more recent models would lead to a reduction of air pollution by exhaust gas.

From the results of these tests it would seem, taking no account of such factors as the brand of motor spirit and the state of the engine, that some, but not all post-war cars emit less carbon monoxide than most pre-war models. It is said, however, that in general there is still room for considerable improvement in the combustion of the fuel during idling of the engine.

* * *

M.O.S. Approved H.D. Oils

The following additional oils have been approved by the Director of Chemical Inspection, Ministry of Supply, as complying with the requirements of Defence Specification DEF-2101.

Supplier and supplier's nomenclature	*OMD grade of oils*
Ampol Petroleum Ltd	
Ampol Deulube 30 HDL	110
Isaac Bentley & Co. Ltd	
Vinoleo H.D. 10W—S.1.	40
Vinoleo H.D. 20—S.1.	60
Vinoleo H.D. 30—S.1.	110
BP Trading Ltd	
B.P. 2333	110
B.P. 2332	110
Deutsche Erdoel A.G.	
DEA 4003	110
Esso A.G.	
Super Favorit HD8 SAE30	110
Veloxol (F) HD30	110
Rudolf Fuchs Mineralolwerk	
Pena Pura HD SAE 10W	40
Pena Pura HD SAE 30	110
Pena Pura HD SAE 50	330
Renolin HD SAE 10W	40
Renolin HD SAE 30	110
Renolin HD SAE 50	330
Gulf Oil (Great Britain) Ltd	
Brit-Gulf 30 HD	110
Brit-Gulf 10/20W HD	60
Gulflube motor oil XHD.20(G.B.)	60
Gulfsil 30 HD-SP	110
Liberty Oils Ltd	
Omegal S.1 H.D. 10W motor oil	40
Omegal S.1. H.D. 20/20W motor oil	60
Manchester Oil Refinery Ltd	
Primor Mil 30 HD	110
Mobil Oil Co. Ltd	
TSL/B. 1029	110
Regent Oil Co. Ltd	
Caltex RPM Delo Special SAE 10W	40
Caltex RPM Delo Special SAE 20W	60
GB. IE	110
Shell Petroleum Co. Ltd	
Shell Oil S.5302	60
Shell Oil S.5304	330
H. C. Sleigh Ltd	
Golden Fleece MIL-DEF D.S.30	110
Kenneth Thelwall Ltd	
Thelson diesel engine oil M.D. S30	110
Veedol G.m.b.H.	
Veedol HD-M SAE 20/20W	60
Vigzol Oil Co. Ltd	
A. 20/20W diesel engine oil	60
C. C. Wakefield & Co. Ltd	
Wakefield H 43/58	330

Books and Films

Worldwide Constructors

A very handsome publication entitled *Laing Year* has been produced by John Laing and Sons Ltd, the well-known building and engineering contractors. In largely pictorial form it gives a good impression of the multitude of variable achievements in engineering for which the Company has been responsible; from the rebuilding of Coventry Cathedral to work on Berkley nuclear power station, and the London-Yorkshire motorway.

Building for the petroleum and allied industries has played a large part in the activities of John Laing. Construction work was done on the technical services laboratory at Coryton, the Shell Haven refinery, and the recently completed International Synthetic Rubber Company's plant at Hythe, near Southampton.

In addition to showing the breadth of work undertaken in the U.K. the booklet presents the activities of the Laing companies overseas, particularly in the Commonwealth, in many different climates and under a variety of conditions.

Fifty Years of Chemical Engineering

To celebrate its fifty years of service to chemical engineering, The Kestner Evaporator and Engineering Co. Ltd have produced the *Kestner Golden Jubilee Book* 1908-58. In the foreword to the book, J. Arthur Reavell, the founder and chairman, records the development of the Company from the beginning and recalls the names of many distinguished men with whom he has been associated in various aspects of his work. The pages that follow describe, with the aid of illustrations, the succession of process plants which the Company has developed, under such chapter headings as evaporation, drying, acid handling, and high temperature process heating. The publication which concludes with a description of the overseas activities of the Company, is a well-produced and copiously illustrated record of the growth of a company to the half-century milestone in its existence.

Industrial Safety

The British Safety Council's poster

The British Safety Council are launching a campaign to cut down the 200,000 eye accidents which occur annually in industry.

The campaign will take the form of posters showing examples of how eye protection measures have saved the sight of workers, and also of a notice board leaflet which, in an extremely forcible fashion, brings home to the reader the awful results that may occur from not taking safety precautions. Photographs, and the citing of specific industrial accidents, should finally persuade those who amazingly still regard the wearing of eye protection as unnecessary, that such measures are vital for their own well-being.

Materials and Design

Engineering Materials & Design, a new monthly technical journal published by Heywood & Company, provides an excellent source of information for engineers and designers in every branch of engineering. It is intended to help the engineering designer to take full advantage of the special properties of new materials; and to show how product performance can be improved and costs reduced by making the best use of the latest materials, finishes, and components in engineering design.

Contributed articles to the first two issues include:

"Designing with Impact Extruded Components", by F. Howard, A.M.I.Mech.E., senior research engineer, Production Engineering Research Association.

"A New View of Materials Selection in Engineering," by A. J. Kennedy, B.Sc., Ph.D., A.M.I.E.E., F.Inst.P., Professor of Materials and Metallurgy, College of Aeronautics, Cranfield.

"New Developments in High-Density Polyethylene", by L. A. Muirhead, B.Sc., A.R.I.C., Shell Chemical Co. Ltd.

"Selection of Fractional Horsepower Electric Motors", by H. J. Cadoux, M.A. (Oxon), A.M.I.E.E., manager of research and development laboratory, Ranco Ltd.

There will also be a free reader inquiry service, and a free advisory bureau to put readers in touch with suppliers of unusual and out-of-the-run engineering requirements.

The new journal containing over 100 pages and data sheets, has excellent diagrams, and is generously illustrated. It costs 2s 6d.

Engineering Codes and Regulations

ICI have recently published a volume of their engineering codes and regulations series dealing with Statutory Rules and Regulations affecting health and welfare in factories. Every conceivable sphere of the subject is covered in a form of presentation which gives admirable clarity, and should fulfil the book's avowed intention, which is to "save the time of busy staff." Consideration of such matters as health and welfare in the initial planning and design stages is essential in all new construction and major alterations, and it is recommended therefore that the volume should be widely available to those concerned with planning, design, and construction.

ICI Engineering Codes and Regulations: Health and Welfare, can be purchased from the Royal Society for the Prevention of Accidents, Industrial Safety Division, Artillery Mansions, 75 Victoria Street, London, S.W.1. The price is 12*s* 3*d* to members of the Society, and 14*s* 6*d* to non-subscribers.

Industrial Opportunities

Lapis is a new international business monthly which will list inventions available for manufacture under licence. It will give brief resumes of the patents involved—as non-technical as possible—which will be listed under subject headings.

Subscription is £10 a year, and includes the right to publish details of patents a subscriber wishes to license at home or abroad, or types of patents they would like to secure for manufacture under licence in their own countries.

The first issue covers subjects as diverse as radar navigation aids and furniture, and general engineering and textiles.

Communications should be addressed to Lapis, 1 Old Burlington Street, London, W.1, and a complimentary copy will be sent to members requiring them if they mention the *IP Review*.

The Welding of Aluminium

More than three years ago the Northern Aluminium Company first issued their book *Welding Aluminium*. At that time the methods available for welding light alloys were not widely known, nor the characteristics of aluminium welded joints fully appreciated.

Since then great advances have been made both in technique and the amount and scope of work done. In the ever-increasing use of aluminium today the trend is towards a greater use of welding as an economical and efficient method of joining. The older gas torch and coated electrode methods are being gradually superseded, in all but certain specialized applications, by the more modern fluxless processes, argon tungsten arc and inert metal arc welding.

As a result of this an extensively revised edition of the book has now been produced. It gives details of the processes and welding techniques and includes tables of procedures with full explanatory notes and illustrations, and an appendix with information on alloys and current ratings.

Motor Vehicle Market

The Australia and New Zealand Bank contrasts the markets for motor vehicles in the two countries, in its October *Quarterly Survey*.

In Australia a competitive market has existed for a number of years, and at present the capacity of some manufacturers is not by any means fully utilized. Local production now represents about two-thirds of the total value of new vehicles sold, and the prospect is for a considerable increase in this share in the future. This progress helps to make the industry less vulnerable to the fluctuations in the country's export income.

In contrast, in New Zealand a seller's market has been brought about by import restrictions. The Government, as well as restricting the supply of motor vehicles, has taken steps to restrain the demand by higher sales taxes, increases in motor spirit duty, and continuance of hire purchase restrictions. The result of this is that a reduction in employment may be necessary, whilst in the long term it is said that prospects are tied to balance of payments trends which have not yet shown signs of improvement.

Lighting in Corrosive, Flammable, and Explosive Situations

The Illuminating Engineering Society has just published a technical report entitled "Lighting in Corrosive, Flammable and Explosive Situations".

The report deals with hazards of explosion and fire which might start in lighting fittings, and with some conditions of corrosion which might affect their safe operation. The report is of particular interest to those manufacturing industries where atmospheric corrosion is a serious matter or where flammable liquids, vapours, or dusts are present. The report does not deal with coal mines or explosives manufacturing plants.

The main sections of the report deal with corrosion hazards, fire and explosion hazards, and maintenance. Four appendices deal respectively with practical examples of protection, chemical resistance of acrylic and unplasticized pvc sheet, flammable vapours and gases, and bibliography.

Copies of the report price 5*s* 6*d*, post free, can be obtained from the I.E.S., 32 Victoria Street, London, S.W.1.

French Equipment and Services Directory

The French Association of petroleum equipment manufacturers has now published a new edition of their official directory, *Materials d'Equipement pour l'Industrie du Petrole*. This edition will be particularly welcomed by all users of petroleum equipment as the original issue, which dated back to 1955, has long been out of date.

The entries of individual companies present technical descriptions of materials available from manufacturers, with specification data, etc. A special section gives an alphabetical index of the members of the association; a classified list of materials (with English translations); details of patents, licences, and trade marks; an English-French glossary of technical terms used in the petroleum industry; and a series of conversion tables of British, U.S., and metric units.

This catalogue consists of 492 pages, costs 2500 French francs (about 2 guineas), and is published by Société Relief, 47 rue Cambon, Paris, 1er.

Chemical Engineers in Great Britain

The Institution of Chemical Engineers recently published *A Survey of Output of Chemical Engineers in Great Britain*. This has now been followed by a further analysis entitled *The Supply and Distribution of Chemical Engineers in Great Britain*.

This latter publication surveys the subject by region, by industry, and by occupation, against the background of the continuing shortage of chemical engineers. The gravity of this shortage was pointed out by the 1956 government report on scientific and engineering manpower which said that whereas the total number of qualified chemical engineers that would be required in the U.K. in 1959 was estimated as 2200, the number actually available in 1956 was 1500.

British Standard

Cast and forged steel valves for the petroleum industry BS 2995: 1958 specifies the classification, design, material, dimensions, testing, and marking for cast and forged carbon and alloy steel, screwed and socket welding valves for the petroleum industry. The nominal sizes of the valves are ¼ inch–2 inch inclusive.

The screwed valves are for assembly with pipe threaded in accordance with API Standard 5L. The socket-welding valves are for assembly with plain end pipe in accordance with API Standard 5L and BS 1600 ("Line pipe" and "Wrought steel pipe for the petroleum industry" respectively).

Copies may be obtained from the BSI, Sales Branch, 2 Park Street, London, W.1. Price 10*s*. (Postage extra to non-subscribers.)

Revised British Standard

Natural rubber suction and discharge hose with woven fabric and wire reinforcement

This new publication, (BS 1102:1958), revises its much shorter wartime predecessor—BS 1102:1943. It deals with natural rubber suction and discharge hose with woven fabric and wire reinforcement, with or without enlarged ends for eight individual types, dealing with construction, dimensions, and properties of the various components.

An important addition to the standard is the inclusion of working pressures as a general guide.

Copies of this standard may be obtained from the BSI, Sales Branch, 2 Park Street, London, W.1. Price 8*s* 6*d*. (Postage will be charged extra to non-subscribers.)

Opportunities for Qualified Men

Hard on the heels of the 1958 volume, which was reviewed on p. 329 of the September issue of the *IP Review*, comes *The Directory of Opportunities for Qualified Men* 1959.

This is virtually a revised volume of the former but with, of course, a new editorial section of five articles. The new directory will, it is felt, be as useful to those for whom it is intended as its predecessor. The publishers are the Cornmarket Press Ltd, 1 Lower James Street, London, W.1. The price is 8*s* 6*d*.

Motor and Motorcycle Racing

Four new colour films, in 16mm, are now available from C. C. Wakefield & Co. Ltd.

Grand Prix D'Europe 1958, probably the most eye-catching of the four, tells the story of the premier Grande Epreuve of 1958, which was run on the tremendously fast Spa-Francorchamps circuit in Belgium. Beginning with the preparation and the practice runs, this 26½ minute film builds up to an exciting climax with the race itself, set amidst the strikingly attractive country of the Ardennes.

On the Limit, running for 14½ minutes, captures the spectacle of the production touring car racing event of the 1958 British Grand Prix meeting at Silverstone. The sight of the ostensibly standard saloon cars being hurled around the race-track, taking considerable punishment—which is amusingly high-lighted by slow motion shots—provides thrilling entertainment. One can only hope it will not give the ordinary motorist too many ideas regarding his own potentialities.

We revert to the two-wheel side of motor sport with a 12½ minute film entitled *Trial and Error* which, in a thoroughly amusing fashion, sets out to illustrate some common faults in the organization and observation of motorcycle trials and suggests how these may be overcome.

Climatic conditions play a large, and in some instances a hazardous, part in the fourth film *Two Wheel Trio*. A March snowstorm ushers in the first part of the film, the Cotswold Cups Trial held in the wooded Gloucestershire countryside around Stroud. This gives way to the largely rain and mist accompaniment of the International Scooter Rally in the Isle of Man. The uninitiated will probably be quite surprised how organized this comparatively new sport really is. It includes some difficult lengthy endurance trials and finishes up with obstacle race cross-country events.

Metaphorically shedding our winter attire we move on to an atmosphere of blue skies and warm sun. Needless to say, this, the final part of the film, takes us outside Britain's shores—to Italy in fact. Here we watch the cross-country thrills of the Italian Moto-Cross Grand Prix. A very cosmopolitan field, nearly all riding British machines, race in some quite hair-raising conditions until the final winner is declared, to bring this 32 minute film to an exciting conclusion.

The commentaries are lightly and wittily given by Raymond Baxter in the car racing films, and by Nevil Lloyd in the motorcycle productions.

Each of these films should provide excellent entertainment for any audience, and applications for their loan should be addressed to the Castrol Film Library, 46 Grosvenor Street, London, W.1.

Antarctic Crossing

After many years of planning and organization, Sir Vivian Fuchs and his party left Shackleton Base in November 1957 on their journey across Antarctica to Scott Base. They reached the South Pole 56 days later on 19 January 1958, and 99 days after setting out they reached Scott Base on 2 March. They had achieved their two purposes, the first being to cross the Continent of Antarctica from the Weddell Sea to the Ross Sea via the South Pole, and the second to carry out a complete programme of scientific work during the journey.

During the journey, of the main party and of Sir Edmund Hillary's party which was laying food and fuel depots from Scott Base towards the Pole, some 45,000 feet of Kodachrome film was exposed under appalling conditions. A selection of this material now appears in *Antarctic Crossing*, the premiere of which was given simultaneously in London, in New Zealand and in Australia on 18 November 1958. This film brings to

A still from the film Antarctic Crossing—*Dr Fuch's party crosses the Polar plateau*

the screen a vivid and inspiring account of this epic journey, its difficulties and its triumphs. One saw a Snocat straddled across a crevasse, its tracks balanced precariously on the edges above a chasm below. To lose it would be fatal to the expedition and it was with a feeling of relief that one saw it recovered and on its way again. One saw men battling across the wind-swept snow and ice to perform their tasks, to make scientific observations, and so on. There was the lighter side also, particularly during the winter period of no daylight of Shackleton Base.

At the London Première Sir Vivian Fuchs was present and had with him various members of the Expedition. These men were introduced to the audience amid prolonged applause; and at the end of the showing the film was given a great ovation.

The film was shot by George Lowe, O.B.E., of the main party, and by Derek Wright, of the support party, and is a tribute to their skill. They had no chance to rehearse or to retake, and frequently were working at temperature below zero Fahrenheit. Sponsored by The British Petroleum Company Ltd, as part of their contribution to the Expedition, *Antarctic Crossing* gives a fifty minute report of a real and inspiring achievement.

Personal Notes

The Iraq, Basrah, and Mosul Petroleum Companies announce that **R. G. Searight** has joined the Companies to become chief representative in Iraq, in succession to Sir Herbert Todd.

Mr Searight's headquarters will be in Baghdad where he will assume responsibility for the direction of the operations of the three Companies in Iraq.

Mr Searight comes to the Companies with thirty years' experience of the international oil industry. He joined the Royal Dutch/Shell Group of Companies in 1928 and first went to Egypt in 1931. He remained in that area until 1937, when he took up an appointment with Shell Petroleum Corporation in the United States of America.

Mr Searight returned to London in 1939 and, in the following year, after a short period in Roumania, went to Egypt for three years. Later he was seconded to the petroleum section of the Headquarters of the Allied Forces in North Africa and Italy.

Early in 1945, Mr Searight returned to Egypt as assistant general manager, and in 1947 was appointed general manager of the Shell Company of Egypt Ltd and Anglo-Egyptian Oilfields Ltd, of which latter company he became chairman and managing director in 1951, holding these appointments until leaving Egypt for London in mid-1952.

In 1953 he was appointed manager of Production Administration and in 1956 became manager of Middle East Partnerships of the Royal Dutch Shell Group of Companies.

H. E. W. Kirby, who succeeds Mr Searight as manager of the Royal Dutch/Shell Middle East Partnerships, joined the Group in 1928 and moved to the Partnerships in 1958. He has been a director of Iraq Petroleum Company and its associated companies since 1950.

Lars H. Nordenson has been appointed vice president in charge of foreign operations for Dresser Industries Inc., one of the world's leading suppliers of machinery, equipment, and technical services to the oil industry.

In recent years, Mr Nordenson was a sales executive for The M. W. Kellogg Co. in that firm's London and Paris offices.

His education was received at the Ecole Libre des Sciences Politiques in Paris, at the Royal Institute of Technology in Stockholm, and at the Massachusetts Institute of Technology in the U.S.A., where he received a masters degree in chemical engineering.

Amongst the new officials of the Instituto Argentino del Petroleo to be elected recently for the 1958–59 period are **Eng. Bernardo Rikles** as president, and **Dr Altavino E. Catinari** vice-president.

C. C. Wakefield Group Publicity Appointments

Laurence Sultan, previously assistant group publicity manager responsible for the industrial and overseas advertising of the Wakefield organization, has been appointed group public relations officer.

K. E. Shurey, previously assistant group publicity manager responsible for Castrol and Agricastrol advertising in the U.K., has been appointed deputy group publicity manager. Mr Shurey is succeeded in his former position by **John C. Edmunds.**

Donald F. Wishart, who has been chief project engineer of the chemical division of Stone & Webster Engineering Corporation in Boston, has been named engineering manager of Stone & Webster Engineering N.V., the recently formed subsidiary in the Netherlands.

A native of Scotland, he started with the Stone & Webster organization in 1926 and worked on many projects in the chemical and petroleum fields.

Jack Lee, industrial relations adviser to the Shell Petroleum Co. Ltd since 1950, was elected to the council of the Industrial Welfare Society at the annual meeting in London on 11 November.

H. N. Wigan has resigned from the board of the Amber Chemical Company Ltd. **J. Firminger,** A.M.Inst.Pet., who joined the Company at the end of 1957, and was appointed general manager home sales, is now appointed technical manager.

Mr Firminger had previously held several technical posts, mainly in the petroleum industry, having been in the Esso European Laboratories and the Esso Research Laboratories between the years 1941 and 1948. Additionally, Mr Firminger has had a number of years' experience with British and American concerns, both in producing and marketing fuel additives.

Mervyn Instruments, of Woking, Surrey, have enlarged their marketing organization by the appointment of the following:—

V. M. Farrant, M.Inst.Pet., as sales promotion manager;
P. M. Bartlett, B.Sc.(Eng.), as divisional sales manager; and
J. A. Shelton, and **A. E. Deslandes** as technical liaison officers.

Both Mr Farrant and Mr Bartlett have had considerable association with the production and refining sides of the petroleum industry as well as in sales and distribution.

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Lectures and Conferences, etc.

Agricultural and Power Conference

Next year's National Power Farming Conference will take place at Harrogate on February 10, 11, and 12.

From it, it is to be hoped, will emerge material which can greatly benefit British farming; systematically planned, balanced use of machinery and men; ways and means to increased productivity; and the slashing of costs to a minimum.

"Machinery and Men" will be the theme of the Conference, which will give equal prominence to the difficulties of both the small and the large farmer.

Many overseas delegates will be present and a full programme of social activities will also be arranged. Admission to the Conference, jointly organized by *Practical Power Farming* and *Farmer & Stock-Breeder*, is free by *ticket only*. Full details, tickets, and hotel accommodation can be obtained from the Organizer, National Power Farming Conference, Dorset House, Stamford Street, London, S.E.1.

Relaxation Behaviour of Oils

A two-day symposium is to be held (under the auspices of the Institute of Petroleum), on "Relaxation Behaviour of Oils, with special Reference to Gear, Ball, and Roller Bearing Lubrication" on Monday and Tuesday the 16 and 17 February 1959, in the City and Guilds College, Imperial College of Science and Technology, Exhibition Road, South Kensington, S.W.7.

The arrangements are being made by members of the Mechanical and Electrical Engineering Departments of the College, and included in the papers to be presented are:

Dr J. Lamb (*Electrical Engineering Department*):
The Measurement of Relaxation Times and the Shear Modulus of Oils. The Effect of Pressure and Temperature.

Dr A. Cameron (*Mechanical Engineering Department*):
The Importance of Relaxation in Gear and Ball Bearing Lubrication.

Professor E. Saibel (*Rensselaer Polytechnic Institute, Troy, New York*):
The Elasto-Hydrodynamic Problem in Gear and Ball Bearing Lubrication.

The subject of the visco-elastic properties of lubricants is one which is assuming increased importance and interest due to the use of very high-speed gears, bearings, and other machine components and the high loadings and rapid pressure fluctuations which often occur. The study of the behaviour of lubricants under very high pressures and the influence of lubricant composition are matters of considerable scientific and practical interest.

As accommodation may be limited, application for tickets (no charge will be made) should be sent to the Registrar, Imperial College of Science and Technology, London, S.W.7, as early as possible.

Essay Prize Competition

To encourage the study of variety reduction, the British Productivity Council has decided to promote a variety reduction essay prize competition. The competition will be divided into two categories—the first being an open competition, for which a prize of up to 150 guineas will be awarded, and the other being a student competition for which a prize of 15 guineas will be awarded. Additional prizes may be awarded for papers in either category if, in the opinion of the BPC, such awards are merited.

Essays must reach the British Productivity Council by 30 April 1959 in the case of the student competition and by 31 July 1959 in the case of the open competition.

Further details can be obtained from: The British Productivity Council, 21 Tothill Street, London, S.W.1.

Operational Research in the Oil Industry

A course of six lectures will be held at Sir John Cass College, Jewry Street, Aldgate, London, E.C.3, on Thursday evenings at 6.30 p.m. beginning on 12 February, 1959.

This short course has been arranged to provide background knowledge on operational research and some of the techniques employed, together with examples of their application in the oil industry.

Prof. M. G. Kendall of the London School of Economics will introduce the subject on 12 February and the course, on succeeding Thursdays until 19 March, will include lectures by representatives from the oil industry who are expert in operational research.

Podbielniak Institute

Details of the lectures to be given in their January session have been issued by Podbielniak Institute, 341 East Ohio Street, Chicago 11, Illinois, U.S.A.

The session will be in two parts: a one week course on analysis of gases and liquids by distillation, divided into principles and theory, analytical distillation equipment, and operational procedures; and two weeks devoted exclusively to analysis of gases and liquids by gas chromatography.

The distillation course is repeated from 4 May to 9 May inclusive, and the gas chromatography course from 16 March to 28 March inclusive and from 11 May to 23 May inclusive.

The fee for the courses are $300 and $500 for the one and two weeks respectively. For the complete session the fee is $750.

Production Technology

Further information has been issued by the College of Production Technology on the calendar for their conferences to be held in 1959. In addition to the details of the external courses and conferences noted in our October issue, particulars may be obtained of the residential courses which include such subjects as senior executive development, office organization and methods, and work study.

Correspondence should be addressed to: The Registrar, College of Production Technology, Great Chart, Nr. Ashford, Kent.

Electronics in Industry

The Solartron Group, held an exhibition at Caxton Hall, London, on 27 and 28 November, to show how their instruments can be used for almost any type of industry. A particular emphasis was placed on electronic applications in the heavier industries such as oil, chemical, heavy engineering, etc. Examples of work undertaken in the petroleum and chemical industries include process control consultant service and overall design responsibility for plant instrumentation; specialization in parameters; and analysis equipment for plant installation, such as on-line analysis for specified elements with automatic print-out or trend signals, vapour-phase chromatography with automatic integration and print-out available, and automatic monitoring.

Schools Poster Competition

The National Benzole Company, together with the Keep Britain Tidy group, are sponsoring a poster competition for schools in England and Wales this winter.

The theme of the competition is "Keep Britain Tidy" and entries must incorporate this slogan or the arrow and basket symbol of the official anti-litter campaign.

The competition is in two classes; for young people between twelve and fifteen years four months, and between fifteen years four months and eighteen years and is open to all pupils at schools supported by public funds.

The National Benzole Company are awarding national and regional cash prizes and the national prize winning entries in each class will be considered by the Ministry of Housing and Local Government for the official anti-litter poster.

Details of the competition have been sent to the head teachers of relevant schools in England and Wales.

U.S. Natural Gas

Marketed production of natural gas in the United States during 1957 totalled 10,680,258 million cubic feet, compared with 10,081,923 million in 1956.

In addition 1,417,263 million cubic feet were used for repressuring (1,426,648 million in 1956) and 809,148 million cubic feet were vented and wasted (864,334 million). Of the total production of 12,906,669 million cubic feet (12,372,905 million), the quantity from gas wells was 8,716,835 million cubic feet (8,306,550 million) and 4,189,834 million (4,066,355 million) from oil wells.

Total consumption in 1957 was 6 per cent higher than in 1956. Details are as follows:

	Volume million cu. ft.	*Consumers Thousands*	*Average value cents per M. cu. ft.*
1956			
Residential	2,327,564	27,887	91·3
Commercial	716,871	2,255	64·9
Field (drilling, pumping, etc.)	1,420,550	—	10·5
Carbon black ...	242,598	—	7·7
Refinery fuel	679,343	—	25·3
All other industrial ...	4,319,952	—	
	9,706,878		
1957			
Residential	2,500,269	28,794	93·0
Commercial	775,916	2,344	68·9
Field (drilling, pumping, etc.)	1,479,720	—	11·1
Carbon black ...	233,788	—	8·3
Refinery fuel	678,810	—	26·4
All other industrial ...	4,611,272	—	
	10,279,775		

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The Search for Lower Costs

The only real offset against inflation-swollen costs in oil refining and chemical operations lies in new design features and more efficient processes, Eger V. Murphree, president of Esso Research and Engineering Company, said recently in a talk in New York.

A detailed study made by the Company showed that better design and improved processes had cut new refinery equipment costs by about five per cent per year. This had more than taken care of the forces of inflation, so that over the year, on an actual dollar basis, the cost of new equipment to do a given job had decreased.

Addressing the American Society of Mechanical Engineers on "The Role of the Engineer in Oil Industry Research," he also credited engineering improvements with reducing oil drilling costs by two or three per cent a year.

New techniques might make it possible to double the world's petroleum reserves, present and potential. For example, the now commonly practised water-flooding method of oil recovery produces an average of 50 per cent more oil than can be obtained with primary methods. Another method —the injection of rich gas into reservoirs—can give very high recoveries in certain cases and, according to laboratory data, might be capable eventually of 100 per cent recovery.

These new methods might be useful when it became economical to develop oil shale and tar sands deposits. Thus, the underground combustion technique had aroused considerable interest, but more engineering work would be required before the method could be put on a truly economical basis.

The packaging field was pinpointed as one in which engineers could make sizeable contributions toward lower costs. Mr Murphree noted, as an example, that the cost today of cans for motor oil was a significant part of the total product cost.

Discussing the size and scope of the oil industry and its research activities, he estimated that the American petroleum industry's research effort now amounted to some $300 million a year and that it has been expanding at an average rate of 12 per cent a year.

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Submarine Pipelines in The Irish Sea

W. L. Day, O.B.E., told at a recent meeting of The Pipeline Industries Guild, in London, of the laying of two 10-inch diameter pipelines from shore, a distance of nearly two miles, into the Irish Sea to discharge an aqueous and slightly alkaline effluent from chemical plant at Windscale.

Mathematical and practical considerations showed that the optimum distance of discharge from high water mark there, so that under all conditions contamination of the shore by the effluent would be negligible, was 9000 ft.

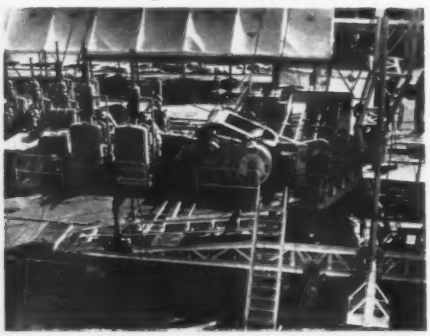
The method selected was to tow the pipe to sea from a specially prepared land runway by means of a large ship, with three attendant heavy naval tugs. The ship was the British Tanker Co's *British Duke*, one of the few ships in the world fitted with very heavy stern winchgear.

There was not sufficient hinterland available on which to prepare each pipeline complete in one length, so that the placing operation could have been reduced to one straight pull. There was room only to prepare sections of one quarter of the length of each complete pipeline. A complete pipeline had to be laid rapidly in daylight and on one tide cycle. Mr Day gave details of the procedure, which required the provision of a concrete track, a narrow gauge rail track, a welding bay, trollies, skids, handwinches, etc., and a steel guide or "throat" to feed the pipe from land to sea. Also two "sea-sleds" were prepared to form towing noses for the two lines, to prevent the leading ends of the pipes from ploughing into the sea-bed, and to limit the rotation of the pipes. As each prepared length of pipe was being towed, it was stopped so that the rear end, when it reached the required spot, could be welded to the front end of the next length.

Never before, it was stated, had the method been used under such bad and unreliable sea and climatic conditions. In spite of this, however, the method of laying was found to be very rapid and economical.

Trade Literature, etc.

U.K. Rigs for the Middle East



Drawworks trailer of Ideco-Woodfield H-525 Dual Rambler mobile drilling rig with 105 *feet leg lift mast*

Woodfield Rochester Ltd are supplying two rigs complete with all drilling equipment, living accommodation, and transportation, for service in Iraq. The first rig and its accessories, together with parts of the second has already been delivered. Woodfield have been working in co-operation with Ideco Inc., their licensors in Texas, and with the Dresser organization in Texas and Europe.

The rigs consist of two Ideco-Woodfield mobile dual trailer outfits each with H-525 double drum drawworks powered by *Cummins NRTO*-6 turbo-charged diesel power units totalling 470 hp, Ideco 600 *Mudmaster* pump with three power units for a total of 705 hp, and Ideco 450 *Mudmaster* pump with two units for 470 hp.

A feature of great importance is that it is unnecessary to dismantle drive chains in order to move from one location to another. Thus contamination of machinery elements and re-alignment problems are avoided.

Lechler Spray Nozzles

Ascog Ltd, Ascog House, 44 Theobalds Road, London, W.C.1 have published a pamphlet describing their various types of spray nozzles for atomization of liquids. These are used to humidify the atmosphere in all varieties of industrial premises in order to ensure that products are kept at correct temperatures.

Electric Surface Heaters

Isopad Ltd, Barnet By-Pass, Borehamwood, Herts, have issued a new catalogue, number PLT/58 dealing with the many types of electric surface heaters made by the company for vessels of all sizes, pipelines, valves, instruments, drums, etc.

Rotary Compressors

A catalogue describing their *Hydrovane* compressors has been published by Whittaker, Hall & Co. (1929) Ltd, Black Lane Engineering Works, Radcliffe, Manchester.

This type of compressor is superseding the older *Whittaker Hall Rotary* Compressor, which was felt to have reached the limit of its development, the Hydrovane principle presenting a major improvement particularly in respect of lubrication.

Natural and Synthetic Rubber Group

The leading companies in Great Britain specializing in rubber and ebonite industrial plant linings have formed a new product group within the Federation of British Rubber and Allied Manufacturers.

The object of the group will be to collect statistics of work done in industrial installations of all kinds; to exchange and co-ordinate technical information on the application and use of natural and synthetic rubber and ebonite linings; and to promote a wider understanding among the industrial community generally of the versatility of rubber and ebonite linings, and their efficacy as protection against the vast majority of corrosive and abrasive materials in modern use.

Steel Rolling Machine

Chamberlain Industries Ltd of Staffa Works, Staffa Road, Leyton, London, E.10, manufacturers of *Staffa* bending machines and hydraulic equipment and a member of the Chamberlain Group of Companies, reports that it has been appointed sole agent in Great Britain for the Omnidard type 82 machine.

The Omnidard is a multi-purpose machine designed primarily for carrying out consecutive rolling operations in tube or rolled steel sections mainly for boiler and steel fabrication applications and is the only machine in its class to be equipped with rolling suspension to allow continuous correction of secondary deformations.

Northern Representatives Appointed

Causeway Reinforcement Ltd, 66 Victoria Street, London, S.W.1, announce that they have appointed Messrs William Dickinson & Co. Ltd, of Proctor House, Newcastle-upon-Tyne, as northern representatives for *Hexmetal* armouring for roads and linings in oil refineries and all types of industrial plant.

Causeway Reinforcement Ltd is a member of the Amber Group of Companies.

Change in Company Ownership

The board of Booker Brothers, McConnell & Co. Ltd announce that Bookers Engineering Holdings Ltd (a member of the Booker Group of Companies) has purchased 90 per cent of the issued share capital of Sigmund Pumps Ltd from members of the Sigmund family and from the Industrial & Commerical Finance Corp. Mr Miroslav Sigmund, the managing director of Sigmund Pumps Ltd, retains a 10 per cent interest in the Company and remains managing director.

Sigmund Pumps Ltd have also produced a most attractive brochure describing the full range of pumps manufactured by the company.

Heat Exchanger Tubes

A leaflet has been published by Clayton Dewandre Co. Ltd, Titanic Works, Lincoln, describing their recently extended range of *Clayton-Still* heat transfer tubes. The tube's dissipating surface, in contrast to the more usual finning or gilling, takes the form of a spiral wire winding. Each loop of the wire is bonded to the basic tube by soft solder, the fillet formed ensuring a thermal contact between the two.

Tank Average Temperature Gauge

Evershed and Vignoles Ltd announce the introduction of their tank average temperature gauge Type TR.6, designed for the measurement of the average temperature of liquids in fixed or floating roof tanks within the range 0°–100° C. The equipment, which is essentially a resistance thermometer, and is suitable for operation in conjunction with any of the resolving methods usually applied to resistance thermometers, is suitable for working depths between 30 feet and 60 feet and can be used with all liquids which are inert to nylon.

Rotary Air Compressor

Alfred Bullows & Sons Ltd, Long Street, Walsall, Staffs, have produced three new *Hydrovane* compressors developed from the Bullows PR303E *Hydrovane* compressor, which is in wide use throughout the world. Although designed for dental work, it is expected that they will create considerable interest for applications in the industrial field.

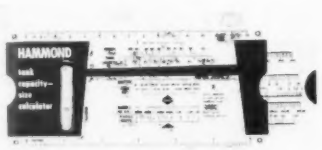
Computer Exhibits

The main exhibits of the Solartron Electronic Group Ltd, Thames Ditton, Surrey, at the British Computer Exhibition at Olympia, 28 November to 4 December included the production models of several recent developments.

These were the *Solartron Electronic Reading Automatum*, which was shown for the first time as a production model; the *Solartron Minispace*, an "electronic slide rule", a small analogue computer which may be used at the side of a designer's desk; the *Solartron Automatic Keyboard Instructor* for the teaching of punch-card operators; and the *Solartron Precision Analogue Computer Equipment* and *Simulator* which has 48 computer units or "bricks".

Tank Capacity Calculator

A pocket-size slide rule calculator for determining capacity and size of storage tanks is now available from Hammond Iron Works, designers, fabricators, and erectors of storage tanks and process vessels for the petroleum, chemical, and petrochemical industries.



Capacities are given in gallons, barrels, and pounds of water. Additional information obtainable includes: decimal equivalent of a foot for all inch units and fractions; equivalent volumetric units; and steel plate weights for thicknesses from 3/16 inch to 1 inch.

Particulars can be obtained from Hammond Iron Works, Warren, Pennsylvania or 744 Broad Street, Newark, N.J.

Baby Marine Diesel Engine

A new British "baby" 1·6 litre marine diesel engine is announced by F. Perkins Ltd, the Peterborough diesel engine company. It will be shown for the first time at the National Boat Show and full-scale production will start early in 1959.

Known as the Perkins Four 99 (M) diesel engine, it is believed to be the smallest four-stroke inboard marine engine of its power in the world. It develops a maximum continuous rating of 33 shp at 3600 rev/min, and an intermittent rating of 40 shp at 3600 rev/min.

Features of the new engine include a new type patented combustion chamber, specially designed for the smaller sizes of cylinder and for high speed operation, and a rotary type fuel pump. It is particularly intended for small single and twin-screw cruisers, and craft where space is limited and weight of particular importance.

International Group Formed For Cargo Heating

An international group has been formed for the manufacture and sale of the Casinghini's patent *Tankerheat* cargo heating system for tankers, the members being E. Green & Son Ltd, Wakefield, England, F. Casinghini Economizzatori Green, Milan, S.A. L'Economiseur Green, Paris, and Green Fuel Economizer Co. Inc., Beacon, N.Y., U.S.A.

The Green Companies in Great Britain, France, and the U.S.A. will manufacture in their respective countries standard *Tankerheat* elements similar to those designed and manufactured by F. Casinghini Economizzatori Green in Italy.

The *Tankerheat* system is claimed to be the answer to the problem of tanker heating coil corrosion. The cast-iron sleeves on mild steel tubes combine the properties of cast iron with the mechanical strength and flexibility of the steel tube. The circular gills on the sleeves promote the flow of heat from the tube and at the same time increase the heat transmitting surface. The system is easily cleaned and no insulation is required between the coils and the hull or framing. The flexibility of the steel tube eliminates all alignment problems and makes it easy to install.

Molybdenized Lubricants

The publication *Rocol Molybdenized Lubricants*, No. 3D, pp. 34, is an exceedingly complete guide to the use of a vast range of molybdenized lubricants for industry, ranging from aircraft to watches and clocks.

The lubricants described have been developed by Rocol Ltd, Rocol House, Swillington, nr Leeds, who have invented 28 specialized lubricants using molybdenum disulphide.

The publication explains what molybdenum disulphide is, and describes its physical properties and commercial specification.

Matthew Hall Exhibition

Main feature of interest to the petroleum industry at the Annual Exhibition and Reception by Matthew Hall Ltd was a 1/25 scale model of the new synthetic rubber plant being built for Shell Pernis Chemische Fabrieken N.V. in Holland. Using the Cariflex process for making GRS rubber, the plant is expected to be completed early in 1960 and will have a rated output of 50,000 tons per annum. Many other exhibits created considerable interest and illustrated the wide and diverse activities of the Company in all spheres of industry and in many parts of the world.

Flexibles Warehouse and Service Depot

A flexible warehouse and service depot has been opened by the Compoflex Company Ltd, at 109 High Street, Godalming, Surrey.

At this depot will be carried a complete range of standard hoses. Hose assemblies complete with fittings will continue to be supplied from the Company's Oldham factory, through the Southern Area Sales Department at Haywards Heath, Sussex.

Bugatti to Manufacture Perkins Diesel

It has been announced that the 1·6 litre Four 99 "baby" diesel engine, made by F. Perkins Ltd, of Peterborough, is to be manufactured in France.

The Four 99 engine will be made under licence by Bugatti, the famous racing car pioneers, at their Molsheim factory for Societe Francaise des Moteurs F. Perkins, the British diesel firm's associate French company. It is planned that production will start soon.

French officials believe that there is a substantial market in France for the economical Four 99 engines, which averaged 50·8 mpg in a Ford Consul and 56·6 mpg in a Vauxhall Velox during official R.A.C. tests.

Phenol Plant in Japan

A new phenol plant has been completed at Iwakuni City, Japan, for Mitsui Petrochemical Company.

The new plant uses the Distillers Co. Ltd process. Stone & Webster engineers provided process designs, supervision of engineering, and acted as advisors during initial operation.

Other phenol plants built by Stone & Webster include facilities for Standard Oil of California at Richmond, Calif.; Barrett Co, Division of Allied Chemical in Philadelphia; and for British Hydrocarbon Chemicals Ltd in Grangemouth, Scotland.

U.K. Affiliate of Blaw Knox

Blaw Knox announce the formation of a new affiliated company —Blaw Knox Chemical Engineering Company Ltd, with offices at 90–94 Brompton Road, London, S.W.3.

Owned jointly by Blaw Knox Ltd of London and their associates, Blaw-Knox Company of Pittsburgh, Pa. U.S.A., the new company will design, engineer, procure, and erect process plants as well as process equipment for the chemical and petroleum industries and serve and develop the British and overseas markets.

Blaw-Knox recently completed the first British synthetic rubber plant at Hythe, Southampton, which will produce 70,000 tons of synthetic rubber annually.

Radiation Shielding

United Chemicals (London) Ltd have issued a brochure giving details of *Unibrix*, a new radiation shielding and building material. Made in eight basic shapes, it is suitable for building dry shielding walls in a variety of forms, and can also be used for such applications as for removable shields around ducts and pipes, for hot laboratory benches, isotope safes, etc. Another advantage is that high density (4·3 sg) lead glass windows can be placed into a Unibrix wall without any protrusions on either side.

A Well-Lit Filling Station

Joe Harry's new filling station on the Sheffield-Chesterfield road, where Group A Kuwait *street lamps by Siemens Ediswan make a powerful attraction for motorists*

Automatic Analysis of Oils

Hilger and Watts research report, BR 8 concerns the Hilger medium direct-readers which can be used to determine additive elements present in lubricating oil and also to check the amount of wear which has occurred in an engine, by analyzing the used lubricating oil for elements of which the bearing metals are composed.

The following ranges of additive elements present in lubricating oil have been determined by medium direct readers:—

Element	*Concentration range*
Barium	0·0010–0·44 per cent
Calcium	0·0020–0·45 per cent
Phosphorus	0·0015–0·46 per cent
Zinc	0·0002–0·51 per cent

Pipe Flow Calculations

Two new calculators of the circular slide rule type for determining the flow of liquids and gases through pipe lines have been announced by Fearns, Mear & Co., 43 St Helens Gate, Huddersfield.

These calculators, it is claimed, quickly and accurately give the rate of flow, pressure drop or required pipe size for all fluids, one instrument dealing with turbulent flow conditions and the other with the streamline flow of viscous liquids. They take into account the viscosity and specific gravity of the fluid and automatically allow for the established variation in the coefficient of friction according to the velocity and pipe size.

Suitable for pipes from 0·1 inch to 40 inches diameter passing from 0·1 to 1,000,000 gallons per hour, they are made in transparent and white Perspex.

Changes of Address

Purchasing Department, Gulf European Company, has been transferred from Paris to London. All purchasing activities which were carried out in Paris will now be handled in London and will continue to be performed under the direction of E. Q. Olson, manager, Purchasing Department.

The new address in London is Gulf House, 2 Portman Street, W.1.

National Benzole Company Ltd announce that their Northern Divisional Offices have moved to larger premises, the new address being: 140–150 Pilgrim Street, Newcastle-on-Tyne, 1.

Acro Marketing Ltd, designers and manufacturers of all forms of advertising display material, formerly of 9 Warwick Court, London, W.C.1, have now moved to their new premises at Acro House, 10–12 Emerald Street, London, W.C.1. The telephone numbers remain unaltered. (CHAncery 5654/5).

* * *

Situations Vacant

AN ASSISTANT MECHANICAL ENGINEER—28 to 32 years of age—is required for an Oil Refinery. His immediate duties will relate to Inspection and Preventive Maintenance. Applicants should therefore have had experience of this work in Chemical Works or Refineries. The commencing salary will depend upon experience and qualifications. The position offers excellent future prospects, but candidates must be University graduates and corporate members of a professional institution. Applications should be addressed to the Refinery Manager, Lobitos Oilfields Limited, Ellesmere Port, Cheshire.

AIR MINISTRY WORKS Design Branch requires in **London, Designer Draughtsmen** for **Bulk Petroleum Storage and Pumping Installations** experienced in one or more of the following:—(a) Storage tank layout and design; (b) pump house and plant layout; (c) development of pipeline schemes; (d) hydraulic calculations. Technical training to O.N.C. standard required. Salaries up to £1015 p.a. Starting pay dependent on age, quals., and exp. Long term possibilities with promotion and pensionable prospects. 5-day week, 3 weeks 3 days leave a year. Normally natural born British subjects. Write stating age, quals., employment details including type of work done to any Employment Exchange quoting order No. Borough 105.

GREASE MAKING. Wanted—man with knowledge of, or experience in, chemistry or making. We also require men as Lubricants Technical Representatives in all parts of the country. Please send full particulars to Box No. 1123, *IP Review*.

Forthcoming Meetings

THE INSTITUTE

(*At* 61 *New Cavendish Street, London, W.*1., 5.30 *p.m.—tea* 5 *p.m.*)

Petroleum-Based Launching Lubricants. G. H. Clark and D. A. Davidson. **7 January**

Chlorination of Salt Cooling Water at Coryton. D. H. Tullis, A. T. Henderson, and L. C. Neill. **4 February**

Annual Dinner (*Grosvenor House, London*) **18 February**

IP Economics and Operations Group

(*At* 61 *New Cavendish Street, London, W.*1., 5.30 *p.m.—tea* 5 *p.m.*)

Developments in the Middle East. Brig. S. H. Longrigg. **8 January**

Some Problems in Developing a New Area. Speaker from BPM. **12 February**

IP ESSEX BRANCH

Dinner-Dance (*At Middleton Hotel, Southend-on-Sea*, 8 *p.m.*) **16 January**

(*At Railway Hotel, Pitsea*, 7.30 *p.m.*)

Annual General Meeting. (7 *p.m.*) **Exploration of the Andes.** J. C. Jewell. **19 January**

Influence of Practical Considerations on Lubricant Selection. S. F. Chisholm. **25 February**

IP FAWLEY BRANCH

(*At Esso* (*Fawley*) *Recreation Club, Holbury*, 7.30 *p.m.*)

Annual General Meeting. Films in the Oil Industry. R. F. Leach, M.A., F.R.G.S. **21 January**

The Free Trade Area. E. H. J. Dixon. **18 February**

IP LONDON BRANCH

Social Evening (*At Chatham Rooms Restaurant*) **22 January**

(*At* 61 *New Cavendish Street, London, W.*1, *at* 6 *p.m.—tea* 5.30 *p.m.*)

President's Address. C. M. Vignoles, C.B.E. **25 February**

IP NORTHERN BRANCH

(*At Engineers' Club, Albert Square, Manchester* 2, 6.30 *p.m.*)

Modern Business Methods **20 January**

President's Address. C. M. Vignoles, C.B.E. **Annual General Meeting** **10 February**

IP SCOTTISH BRANCH

(*At Recreation Hall, BP Grangemouth Refinery*, 7.30 *p.m.*)

Annual General Meeting (7 *p.m.*) **Film Evening** **22 January**

IP SOUTH EASTERN BRANCH

(*AtKing's Head Hotel, Rochester*)

Annual General Meeting. Film Show. (7.30 *p.m.*) **6 January**

Drilling for Water. G. Bell. **Film Show.** (7.45 *p.m.*) **3 February**

IP SOUTH WALES BRANCH

(*At the Training Centre, BP Refinery* (*Llandarcy*) *Ltd*, 5.30 *p.m.*)

Films in the Oil Industry. R. F. Leach, M.A., F.R.G.S. **8 January**

Annual General Meeting. Film Show **12 February**

IP STANLOW BRANCH

(*At Blossoms Hotel, Chester*, 7.30 *p.m.*)

Annual General Meeting. (7 *p.m.*) **Operational Research and Electronic Computers.** D. A. Caplin and G. W. Sears. **21 January**

(*At Grosvenor Museum, Chester*, 7.30 *p.m.*)

History and Development of Manchester's Airports. G. A. H. Harvey. **11 February**

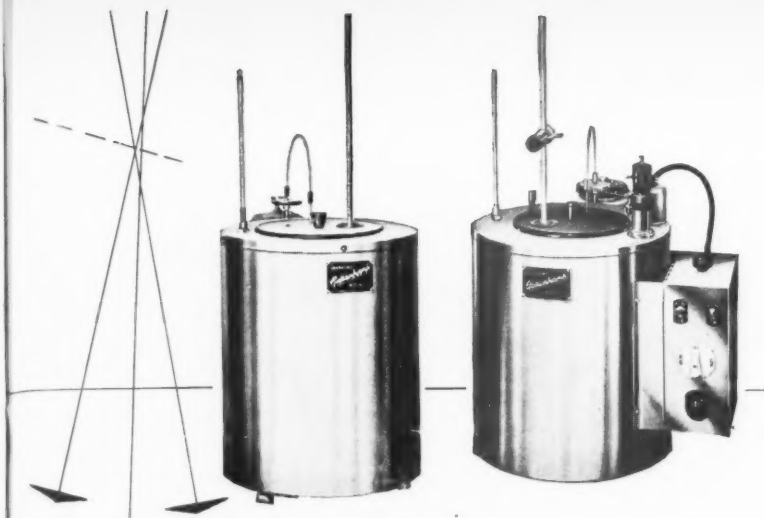
(*At Blossoms Hotel, Chester*, 7.30 *p.m.*)

Liquid Fuels and Appliances for Domestic Heating. S. S. Whitehead. **19 February**

IP YORKSHIRE BRANCH

(*At Queens Hotel, Leeds*, 7 *p.m.*)

First Annual General Meeting. Address by the President. **15 January**



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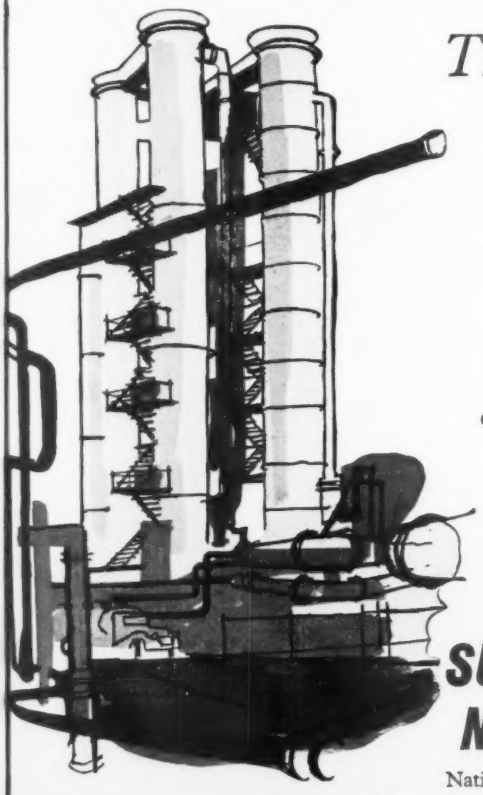

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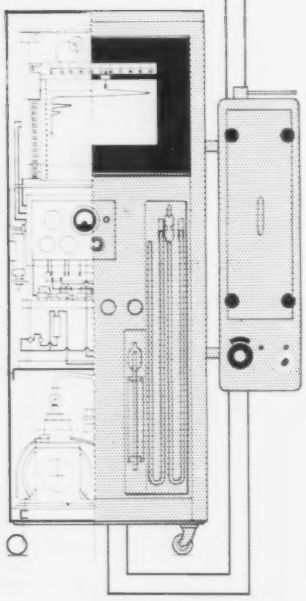

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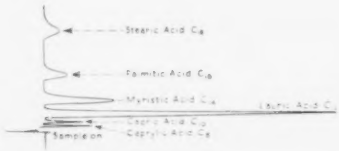

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Firm foundations for FAWLEY

Progress of piling and slab construction for storage tank

(Photos by courtesy of the Esso Petroleum Company)

West's Shell Piles were used at the Esso Refinery, Fawley, for pipe trestles, pump house, ballast water tank and oil storage tanks. The contract also included intricate foundation work for a cooler box.

West's Shell Piling System is a modern, mobile method of piling, combining a precast outer shell with a cast-in-situ pile core. It provides enduring support for most types of structure, particularly those imposing great weight per unit of area occupied, on ground of poor bearing capacity.

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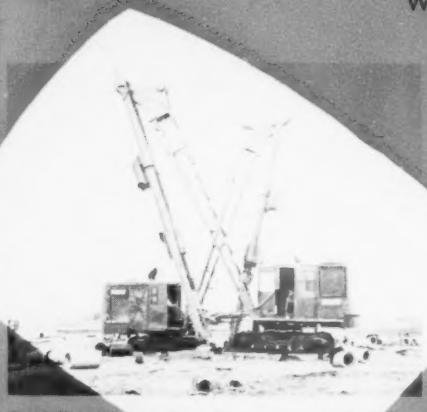

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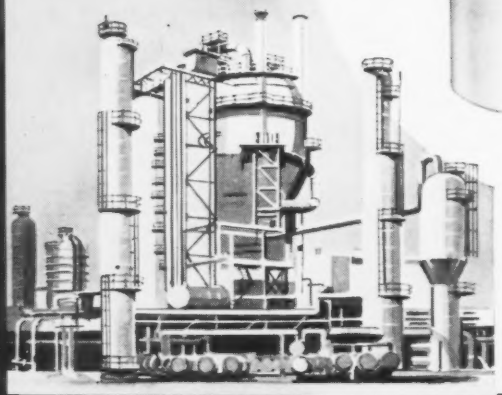

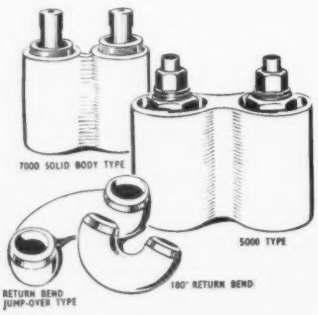

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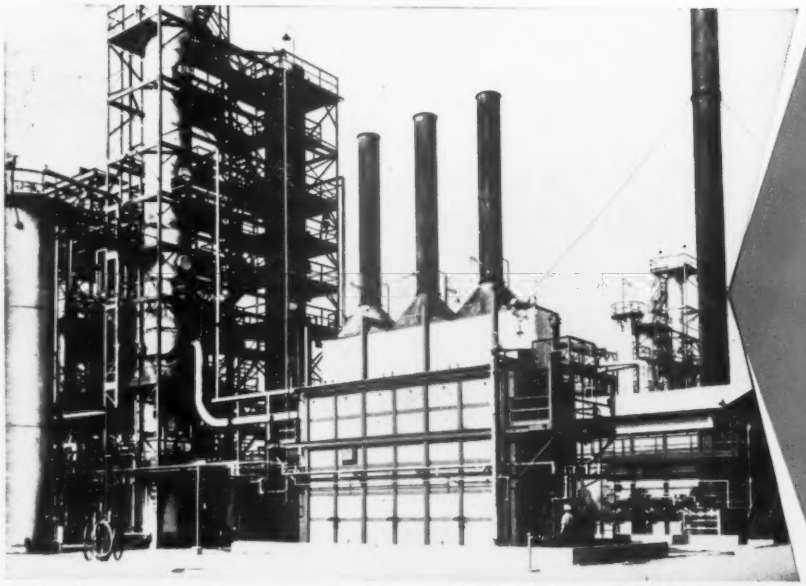

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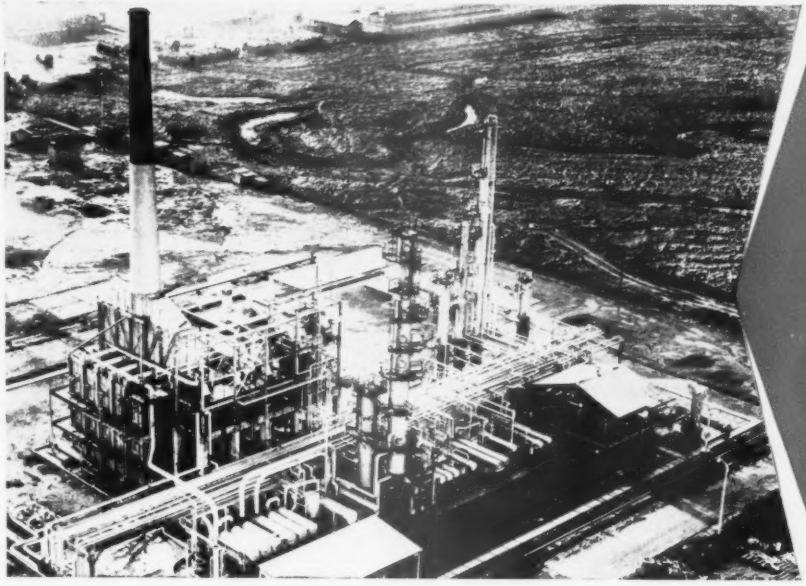

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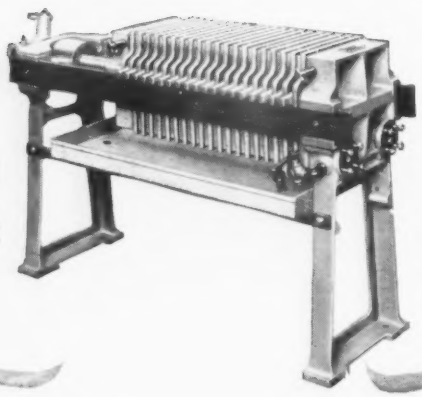

The illustration shows a cast iron 13 in. square "V" type filter press which is mainly used with filter cloths and filter papers as a polishing filter for oils, etc. Filter presses are also made in stainless steel, aluminium, gunmetal and timber in a variety of designs and are provided with suitable pumping machinery.

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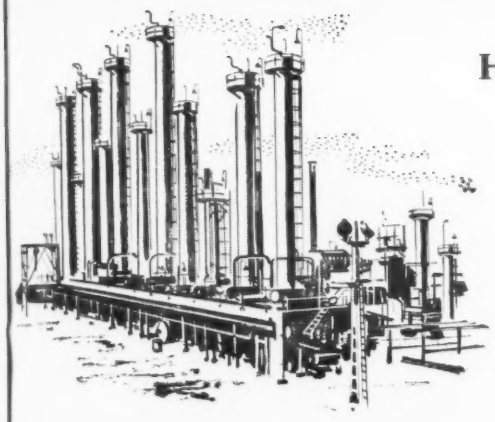

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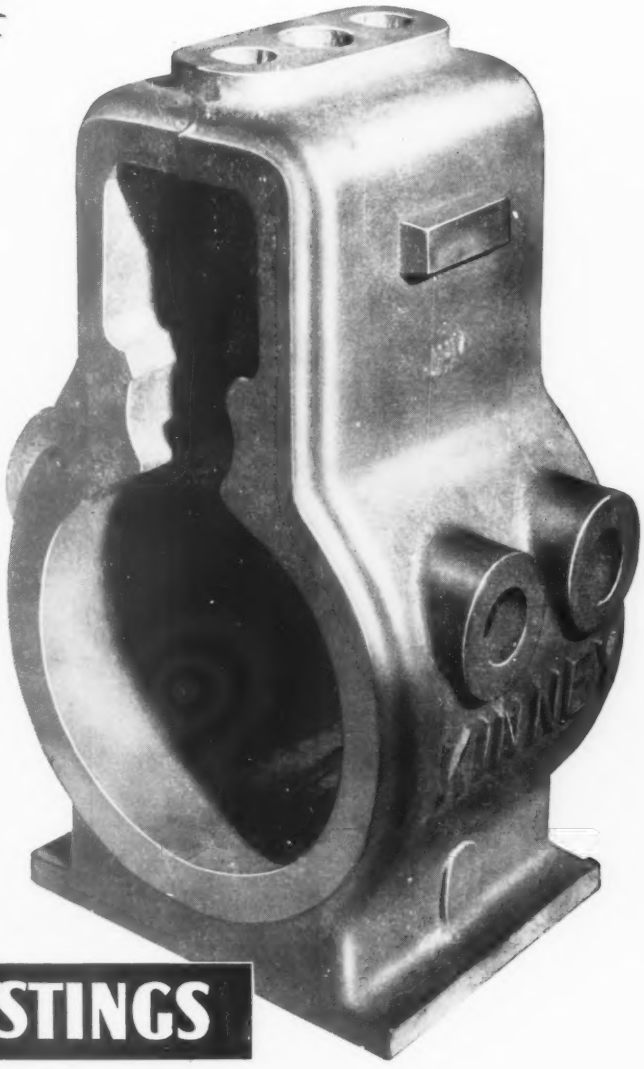

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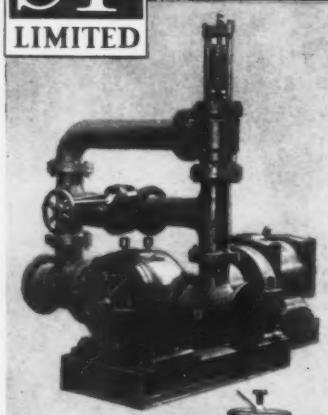
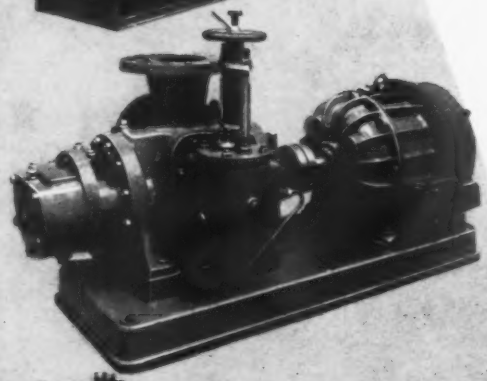


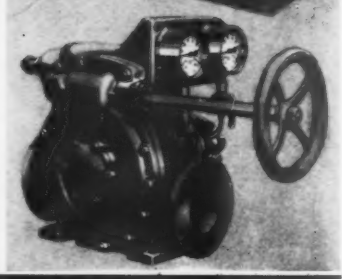
(Left)
Positive Acting Rotary Displacement Pump for the handling of Molasses and viscous fluids, electrically driven through totally enclosed Reduction Gear Box.

(Below)
Suitable for handling Spirits and other volatile fluids, this Screw Displacement Pump is of the all round clearance design and is capable of working with a high suction lift. The flow is practically pulseless and the unit self priming.



(Above)
Positive Acting Variable Output Guinard Rotary Piston Pump. Electrically driven through Reduction Gear Box, for Oils of varying viscosity.

(Right)
Reversing Flow Rotary Displacement Pump for fitting on tank wagons. These pumps are driven from a power take-off on the gear box.



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Whessoe Ltd	ii

Typical of the sort of super service station BP is building across the two provinces, this BP garage stands at the corner of Ontario and Leclaire Streets in down-town Montreal. Says 42-year-old owner WILLY SWEET (cleaning windscreen) – "It's a darn nice outfit, BP. Sales? I was up 4,000 gallons first month I took over."

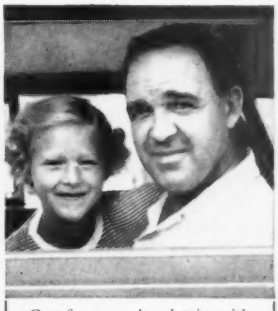
CANDID CANADA SPEAKS ITS MIND

It was only in April 1957 that the first gallon of BP gasoline was sold in Canada.

Today BP Canada Limited (an affiliate of the international British Petroleum Company Limited) operates a chain of over 350 garages, spanning across the provinces of Ontario and Quebec. Later this year, BP will have around 700 garages. And by 1960, a great new BP Refinery will be in operation at Ville d'Anjou. Recently a special reporter was sent from London to find out what Canadians think of BP's great new development.

What the motorists think, you can read on this page. They think BP's good. But what of the men who sell it? For this, come to the BP Don Mills service station, Toronto City. Here works expatriate Britisher Mr. W. R. Matthews. He used to sell BP in England. Now he sells it in Canada. And what does he think? "Sir," he said to the BP reporter, "the future of BP in Canada? The answer is WOW!"

Driver of a British Ford Anglia, 74-year-old SAM DIAMOND of Ottawa. "I find BP 100%. Been using it for about a month now and yes sir, I find everything about BP just fine."



Out for a weekend trip with his wife and 7-year-old daughter Marilyn, DONALD MORRISON of 28 Greenland Road, Don Mills. "I always use BP, it sure is OK by me."

28-year-old VIC ORTIZ of 4 Hollywell Drive, Toronto City, drives Ford Fairlane 235-774, is himself in the automobile business: "It's real fine gas is BP. As for service, I reckon they give the best you'll find in the city."

Pipe Line Spread Boss, 37-year-old WILLIAM BERNARD of 74 Jackman Avenue, Toronto. "I always use BP and I find it works real good. I reckon British goods are just fine."

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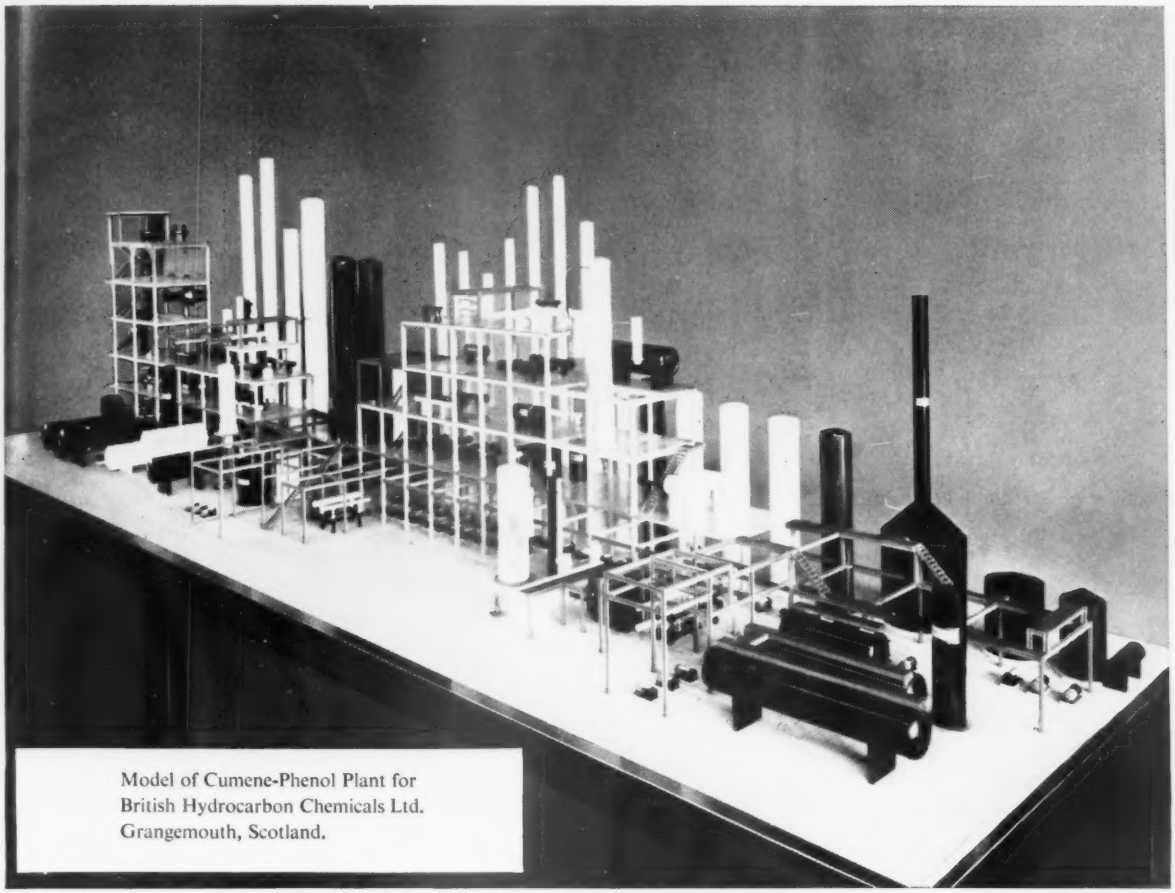

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